PERFORMANCE MEASURES FOR EVALUATION OF

LEAA AND CJS PROGRAMS

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FIRST WORKING DRAFT
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I. INTRODUCTION

Each year the Law Enforcement Assistance Administration (LEAA) spends hundreds of millions of dollars on programs aimed at improving the components of the criminal justice system throughout the United States. Since LEAA's inception (1968), there has been widespread concern that the monies being spent should be for innovative new programs whose underlying hypotheses could be tested in order to advance our knowledge of CJS operation and the entire social environment impinging on the problem of crime. It is well known that much of the money has not been spent in this manner. While indeed some funds had to be allocated to short-term projects of high priority to local agencies, thereby "buying" credibility with the agencies, other funds were channeled to diverse projects that were often not well conceived, duplicative, and designed in such a way that no one could learn from the experience of implementing the project. The proverbial "recreation of the wheel" has been a severe problem with LEAA projects and programs. Some argue that much of this activity has served the useful purpose of educating CJS planners, managers and consultants throughout the United States, and therefore that the funds may not have been wasted. Yet it is difficult to imagine that such education could not be achieved in less expensive ways. The very design of the LEAA--providing three distinct mechanisms for channeling funds to a particular agency (state funds via the SPA, discretionary funds via the regional office, and research funds via the National Institute of Law Enforcement and Criminal Justice

[NILEC])--is conducive to a lack of communication among grant and contract recipients. LEAA staff members themselves often are not aware of other LEAA programs related to or even nearly equivalent to those in their own bailiwick. Even if they are aware of such programs, it is often difficult to obtain a final report of already completed projects--and few final reports contain an adequate unbiased assessment of the outcomes of the program that would be useful to others.

Need for Evaluation

Thus, a strong need is apparent for new mechanisms for appraising or evaluating LEAA programs and for disseminating this information throughout the United States. The activity of evaluation implies a focus on measurable quantities, on system inputs, on measures of process, on system outputs, and on final outcome measures. While quantitative measures do not exclude qualitative analyses--and many process evaluations must use interview and participant-observer techniques to develop a qualitative case study--they do bring about a new accountability in CJS operations. If defined appropriately and used with care, they allow system administrators (or outsiders) to compare the performance of the same system at different times or different systems at the same time. And they facilitate the evaluation of innovative programs and experiments.

While certain quantitatively-oriented measures have been accepted by CJS administrators for some time (e.g., the FBI Index Crime Rates, clearance rates, rates of recidivism from correctional programs), many

of these have been subject to abuse and manipulation or at least
misinterpretation. For instance, police have well-known discretion in
categorizing crimes and reporting clearance rates. And citizens have
a difficult time relating rates of index crimes per hundred thousand
to their own personal risk situation. Yet "crime clocks" ("5 rapes
every x minutes") and other popular crime reporting mechanisms do not
clarify the risk situation, and often only contribute to undue alarm.
Recidivism rates are traditionally different by a factor of two or more,
depending on one's point of view--police (at one end of the CJS) or
corrections (at the other). This confusion--which is primarily
definitional--is compounded by the fact that few people--CJS administrators
or others--can project the consequences of an 80 percent recidivism rate,
say, over the lifetime crime career of an individual. Thus, there are
needs to portray the crime picture in a better way to citizens and
administrators in order to reveal personal risks more accurately and to
link certain system performance measures to other (perhaps more fundamental)
measures.

A focus on quantitative measures in evaluation suggests an ability to
predict the consequences (in quantitative terms) of alternative program
designs prior to implementation. This implies the use of models of
system behavior. Strategic models such as Professor Blumstein's JUSSIM
can be used at a CJS-wide level to assess (before the fact) the system
consequences of increased workload or more personnel at a particular
stage or decreased recidivism rates from a particular correctional program.

Likewise, at an agency operational level, tactical models of operation--such as models of police patrol deployment--can be used to project the consequences of alternative patrol allocations. However, from the CJS administrator's point of view, many such models are now clouded behind the mystique of Greek symbols, long equations, and computers. Thus, tools which would be useful in evaluations are perceived to be inaccessible to the typical CJS administrator.

Outline of Paper

The purpose of this paper is to address the problem of CJS and LEAA evaluation from primarily three different points of view. Given the time and length constraints under which the paper was written, our approach has been to lay out these three areas for potential further investigation, but without fully detailing any particular one.

We start at the macroscopic level. How can a particular component of the CJS (say police, courts, or corrections) use expenditure, employment, and resource allocation data to compare its own efficiency and effectiveness over time and against that of equivalent agencies in other jurisdictions? Focusing on police departments as a case example, we discuss ways to study these departments on the basis of data such as those contained in the annual volumes on "Expenditure and Employment Data for the Criminal Justice System" issued by LEAA and the annual "Survey of Municipal Police Departments" issued by the Kansas City Police Department. Questions about near-term (15-year) trends will be addressed and ways will be suggested

for checking the validity of several common assumptions regarding the
Criminal Justice System through the use of data of this type. Certain
possible pitfalls in the processing of such information will be pointed
out. These pitfalls are due primarily to two potential sources of
error: the excessive degree of aggregation of the data as they appear
in the surveys; and the differences from place to place in the statutes
regarding the functions of police departments. This part of the paper
will attempt to make a case for standardization of data gathering
procedures around the United States and for cross-sectional statistical
studies of Criminal Justice System expenditures and employment data as
an aid to a variety of decision-makers in this area.

Three families of indicators of "output" for the CJS are then identified.
It is believed that the more meaningful of these indicators--the ones
which could truly measure the reduction of crime and the overall
performance of the CJS--are either too difficult to quantify or are only
obliquely related to specific decisions by policy makers with regard to the
allocation of resources in the CJS. For this reason, it may be
preferable, at least in the short run, to concentrate on using more
readily measurable indicators that measure such items as productivity,
efficiency, and sub-system performance as gauges in helping evaluate the
overall performance and effectiveness of alternative CJS programs.

Continuing at an aggregate level, we next explore certain system-level
performance measures that deal with crime, victimization, and recidivism.
The focus is on improved methods for collecting, processing, and

interpreting data related to these key issues. This includes more careful attention to controls in LEAA-sponsored victimization surveys. It also includes projecting easy-to-collect annual statistics over a multi-year horizon. For instance, in auto accidents, the annual rate of accidents per 100,000 provides one number for a person to gauge his risk of being in an auto accident. But typically this figure can be extrapolated via models (or in some cases, actual recorded data) to reveal that the "average" motorist becomes involved in an auto accident once about every ten years. In a similar manner we wish to explore certain CJS performance measures that extend beyond the one-year time horizon and allow one to project into the indefinite future. Particularly when dealing with small probabilities, people are notoriously bad at perceiving the implication of low probability events. Pedestrians and automobile drivers in some urban centers have a one-in-10^6 chance of being killed in any particular day due to an auto accident; in some cities the risk of being murdered is even greater. Yet what does daily reporting imply about a person's perception of this risk? Projected over a lifetime, the probability of being killed in an automobile accident or by a murderer can be one in fifty or higher. Similar projections apply in the area of corrections (when dealing with recidivism) and courts (when evaluating the long-range consequences of alternative sentencing policies). So, much of the second section of this paper addresses the issue of long-range projected performance measures and how they could be used more directly in evaluating both CJS and LEAA programs. One important (and novel) evaluative use of

such data could be in monitoring the effects of new societal policies dealing with the CJS. For instance, examples are outlined describing the potential evaluation of the crime-reduction effects of new gun control laws and/or new laws dealing with convicted murderers (e.g., limited use of the death penalty). The section concludes with several specific recommendations to LEAA in the area of crime occurrence, victimization, and recidivism data.

The third section of the paper focuses on less aggregated questions, namely those dealing with operationally-defined performance measures and their use in evaluation. Two different types of evaluation are identified at the state or local level--evaluation of experimental programs and evaluation of routine day-to-day operations. For the first, it is proposed that LEAA should support the development of a formal CJS-focused evaluation methodology, including the sequence of experimental steps ranging from identification of a problem area; to generation of hypotheses; to experimental design, execution, and monitoring; and finally to after-the-fact evaluation. Special emphasis is given to the role of formal models in each of the various phases of the evaluation process. For the second, it is argued that several quantitative measures, models, and methods currently exist that, if properly packaged, could be utilized by numerous CJS agencies in evaluation of very specific day-to-day operational problems. It is recommended that easily-understood handbooks be written for this purpose. This section also concludes with several specific recommendations for LEAA.

The fourth and final section of the paper details some specific recommendations to LEAA in the area of evaluation. While most of the recommendations are derived from the preceding three sections, several are more general, pertaining to the entire process of national evaluation and dissemination which LEAA would like to influence.

II. SYSTEM-LEVEL AGGREGATE MEASURES OF PERFORMANCE

Despite recent massive efforts by LEAA and other agencies to contain crime in the United States, there is clearly a need for careful reappraisal of alternative ways for allocation of resources among and within the various local, state, and federal criminal justice agencies.

Central to such an appraisal is the capability to address the issue of relative effectiveness versus cost of allocative decisions and hopefully, thereby, to perform meaningful comparisons among alternative programs. Development of such a capability is the goal of most responsible public administrators. Unfortunately, in the case of almost every single aspect of the criminal justice system (CJS) no such capability exists today. This is not due to a lack of trying in this direction, but rather to the enormous difficulties inherent to the subject. Our understanding of cause-and-effect relationships in the area of crime--an understanding which must precede the performance of effectiveness versus cost appraisals--is sorely deficient. As a consequence of this state of affairs, decisions concerning the allocation of CJS resources are made mostly on the basis of past experience, intuition, and wishful thinking (in varying proportions).

This chapter proposes several modest, yet feasible steps that could be taken under LEAA supervision to start the process of assembling CJS-level data that could eventually be used to assist the resource allocation

process. Since there is no single administrator of a CJS, at least at the local or state level, the intended decision makers who would be making CJS-level resource allocation decisions would most probably be LEAA staff members (i.e., members of SPA's, regional offices, and Washington offices). We plan to describe a family of readily obtainable measures of inputs and, what we shall call, "intermediate outputs" of the CJS. These measures, in turn, provide the basis for a few meaningful, albeit highly imperfect, indicators of effectiveness.

Specifically, subsequent sections will cover the following main points:

a) Insufficient attention has been devoted in the past to the establishment of an information basis for understanding current patterns and historical trends regarding the allocation of inputs (resources) in the CJS. Although several private and governmental organizations conduct a variety of periodic surveys of criminal justice agencies, this information often suffers from lack of adequate detail or analysis to assist systems-level decision makers.

b) The information already available from concluded surveys has not been analyzed in a way to shed light on system-level resource allocations. Nonetheless, a preliminary examination of such data might reveal several consistent patterns and provide valuable perspectives with regard to the composition of the various costs associated with the CJS.

c) The known relationships between, on the one hand, the inputs (resources) to the CJS and, on the other, its true outputs (i.e., its preventive, deterrent, and corrective effects on unlawful behavior) can best be described as tenuous. In the short run, and until this state of knowledge improves, we may be better off by measuring the effectiveness of the various CJS sub-components in terms of relationships between inputs and more tangible intermediate outputs.

d) A study and analysis program to deal with items a) through c) above is a worthwhile activity for the LEAA to undertake.

Orientation

Before proceeding to a detailed discussion of these points, it is worth clarifying the aims and orientation of the programs to be proposed here. The emphasis is _not_ on sophisticated analysis, but on the development of information that may be useful to several target audiences and of measures of effectiveness that may provide additional focus to their deliberations. Such target audiences may include:

a) LEAA-State Planning Agencies and other regional agencies that administer the distribution of federal funds among regional, state and local levels. The primary concern of these agencies is the effective utilization of such funds. The proposed information and measures may prove of assistance to these groups, especially

during the review phase of existing programs (in anticipation of refunding) in coming to a judgement on whether resources are being effectively utilized.

b) Management and union representatives in the Criminal Justice area who, under today's conditions, must often negotiate in a virtual vacuum with respect to information on wages, benefits, and productivity standards both on an absolute and a comparative scale.

c) Department of Justice and LEAA planners who must decide, at the federal level, on the proper allocation of resources among and within the various components of the CJS in the short and in the long run. It would be utterly presumptuous even to suggest that anything proposed here will allow any such decisions to be made in a less subjective or more "mechanistic" way in the future. It is, however, plausible to assume that a better perspective on current trends in expenditures and performance in the CJS will provide an improved environment for decision-making. The identification of trends is a major objective of the programs to be proposed here.

d) Elected and appointed administrators at the state and local level (city managers, attorneys general, governors, etc.) entrusted by the public with monitoring the efficient operation of CJS agencies. The program advocated here will facilitate the performance of these duties by such officials. For instance, a city manager could take advantage of newly available information

to inquire as to why his city "spends more money per capita on police protection than city X, while also obtaining inferior service (according to a given measure of performance) than city X."

e) Researchers on the CJS: drawing from the greatly expanded information bank to be advocated here will, in many cases, free these researchers from the onerous task of collecting survey data on the CJS on every occasion when such data are needed. Studies of a national rather than of a local or regional scope will also be encouraged through the availability of information of such a scope.

f) Last but not least, the public at large will benefit through the availability of regularly published and readily comprehensible information on the costs and, perhaps, on some indicators of performance for the CJS. The Department of Justice has long ago recognized the public's "right to know" in this area through the annual publication of the FBI Uniform Crime Report and, more recently, with the annual issuing of statistics on Expenditure and Employment Data for the Criminal Justice System [1].

Resources Allocated to the Criminal Justice System

Existing Information Sources

The resources allocated to the CJS can best be measured in terms of funding commitments and of manpower. The sole Federal Government

publication which is specifically oriented toward the compilation and presentation of data along these lines is the annual volume [1] on Expenditure and Employment Data for the Criminal Justice System, issued jointly by the U. S. Department of Justice (LEAA, National Criminal Justice Information and Statistics Service) and the U.S. Department of Commerce (Bureau of the Census, Social and Economics Administration). This annual survey covers all facets of the CJS (police protection, courts and other legal services, and corrections). Data are itemized along the usual federal-state-local lines of authority, as well as by state, county, standard metropolitan statistical area (SMSA), and municipal government. Unfortunately, this information suffers from an excessive degree of aggregation: the details of the allocation of resources within each of the CJS subsystems (police departments, courts, corrections systems) are not dealt with. Consequently, the value of the data for resource allocating decisions is limited, except from the case of "global" decisions of the type that a top-level Federal Government official might make. Appendix I shows a copy of the questionnaire used for the compilation of this survey. It is obvious that the data collected through the questionnaire are of limited value for an in-depth analysis of the underlying causes of changes in CJS expenditures and employment.

Other annual surveys of CJS manpower and expenditures at the local level are available through the following publications: City Government

Finances (U.S. Department of Commerce, Bureau of the Census) [2], The
Municipal Yearbook (International City Managers Association - ICMA) [3],
and the Survey of Municipal Police Departments (Kansas City Police
Department) [4]. The Census of Governments (U.S. Department of Commerce,
Bureau of the Census) [5] conducted at five-year intervals provides
data similar to those contained in the City Government Finances but in
greater detail and itemized along several types of governmental or
statistical-purpose jurisdictions.

The value of each of the aforementioned statistical compilations to
the analyst can best be assessed by reference to the breadth and depth of
their coverage. At one extreme, the Census of Governments and the City
Government Finances cover all aspects of the CJS on a nation-wide basis
but in a highly aggregative manner. At the other end of the spectrum,
the Survey of Municipal Police Departments, as its name implies, is
limited to police departments and, in fact, surveys only the cities with
a population of 300,000 to 1,000,000 in 1970 (43 cities are covered by
the latest surveys). This latter survey provides a very large amount of
information for each of the police departments that it covers: numerous
items are listed including a breakdown of expenditures by function,
employment and salary figures by category of employee, benefit and pension
data, information on mechanical equipment in use, some demographic data
on the city in question, etc. Appendix II contains a copy of the latest
questionnaire being used by the Kansas City Police Department in this
connection. While some of the questions included in this highly detailed
form may be of uncertain informational value or may be inadequately

defined, it is clear that data obtained through this survey may be highly useful in monitoring and understanding the process of change with regard to police department resource utilization.

The type of cost-effectiveness analysis work which will be advocated in this chapter would require information of a similar level of detail as that presented in the Kansas City Survey of <u>Municipal Police Departments</u>. Thus, studies of this type with a nation-wide scope and dealing with the entire CJS imply an information base with depth and breadth comparable, respectively, to those of the Kansas City surveys and of the Bureau of the Census quoted publications. Although development of such a data base may appear to be an ambitious task, it represents in practice only an incremental change in the effort required to procure and compile the present <u>Expenditure and Employment Data for the Criminal Justice System</u>.

Admittedly, however, careful study is needed in order to identify and select all the items of information to be collected and in order to prepare an unambiguous questionnaire which properly defines the requested items for the benefit of the responding local officals. With respect to this latter subject, it is worth mentioning that the unambiguous description of the data sought is by no means a trivial matter. It is often done carelessly at the present time and leads to (occasionally large) differences among the figures reported for the same item in the various surveys. For instance, the figures reported for the total annual cost of local "police protection" in New York City vary, at present, by as much as 30% (or a range of $200-million) depending on the respondent's

interpretation of what should be included under this item. (Transit
Authority Police expenditures and Housing Authority Police expenditures
in New York City are not included in the funds allocated to the New York
City Police Department. Some respondents include the former expenditures
as parts of "police protection costs"and others do not.)

Analysis of Resource Inputs to the CJS

As noted in the last section several sources are already available
with information concerning the resource inputs (economic and otherwise)
to the CJS. Despite their serious deficiencies, which were also noted
above, these information sources contain sufficient material to provide
the basis for serious study of the composition of the various CJS costs.
Unfortunately, this particular subject has apparently attracted only
limited attention. Part of the explanation for this phenomenon may lie
with the (justified) preoccupation of criminologists and other analysts
with the investigation of trends and statistical patterns contained in
annual crime statistics, case disposition statistics in the courts,
recidivism statistics, etc.

A recent review by the authors of existing work on the composition
of city police department costs turned up surprisingly little material
of interest. Perhaps the most worthwhile is the recently published
analysis of Bahl, Campbell and Greytak [6] of expenditure and revenue
patterns in New York City. As part of this analysis, the authors have
examined in some detail the costs of the New York Police Department and,

through a simple mathematical model, have attributed cost increases to

the factors of increased employment in the Police Department, inflation,

and real wage gains. They have also performed some simple comparisons

of per capita police protection costs in New York City with similar

costs in nine other major cities. Kakalik and Wildhorn [7] in an

earlier investigation collected a considerable amount of information on

cost breakdowns, manpower, manpower allocation, mechanization, etc. for

a few large police departments and by using simple calculations and some

regression analysis arrived at several conclusions and conjectures

regarding resource allocation in police work.

Lewin [18] has also performed several studies of recent trends in

salaries and manpower on the basis of data gathered through the annual

ICMA survey of police departments.

Finally, an extensive amount of work has been done on multi-variate

regression analyses that attempt to identify statistical relationships

among police inputs (mostly police costs per capita), crime statistics

(or victimization rates) and a host of environmental variables (such

as demographic data, street mileages, geographical location, etc.). These

studies usually concentrate on groups of cities within a given state or

cities located within one or a few metropolitan areas. Among the most

recent ones are the analyses of Beaton [8] (New Jersey cities),

Walzer [9] (31 cities in Illinois), Hirsch [10] (64 St. Louis metropolitan

area police departments), Shoup and Mehay [11] (52 cities in Southern

California), Sunley [12] (selected cities within the metropolitan

areas of Detroit, Cleveland, Minneapolis-St. Paul and Pittsburgh),

and Kakalik and Wildhorn [7] (eight major city police departments).

Data Collection and Study Recommendations

The brief review of existing literature on police expenditures

and resource usage illustrates what are believed here to be common

characteristics of similar past work on other aspects of the CJS as

well:

a) Studies have to rely on incomplete data bases in terms

of both depth and breadth.

b) The focus of attention has been on aggregate measures

of cost and resource utilization, while questions related to

the detailed composition of costs, cost increases and employment

figures have been largely ignored.

In view of these deficiencies, two principal recommendations can

be made:

i) The Law Enforcement Assistance Administration should

assume responsibility for the collection and dissemination of

information on the various types of resources utilized by the

CJS. The collection of the data should be on an annual basis.

In terms of breadth, the survey should be of a scope similar

to that of the LEAA-Census Bureau annual volume on Expenditure

and Employment Data for the Criminal Justice System. In terms

of depth, however, the survey should be considerably expanded and seek information much more detailed than that which is obtained currently. The LEAA, moreover, should publish on an annual basis and in easily comprehensible form the results of these surveys. Emphasis in these annual publications should be on exhibiting trends in CJS expenditures and employment and in discussing the probable underlying reasons for these trends. The format of the presentation should be consistent with the needs and backgrounds of the various potential audiences for these surveys which were identified earlier.

The LEAA annual publications should draw their material and support from work done under the second program recommended here:

ii) The Law Enforcement Assistance Administration should undertake or support a series of studies to analyze CJS expenditures and manpower data. These studies should include the examination of time-series trends for individual locations or for groups of jurisdictions and the performance of cross-sectional comparisons among individual (or groups of) municipalities, SMSA's, states, or regions with varying or similar characteristics.

Recent research performed by Odoni [13] on the subject of near-term (1958-1974) trends in police department resource utilization explored issues similar to those suggested under item ii) above. On the basis of that experience, the following (far from exhaustive) list of promising topics, each concerning one or more aspects of the CJS, can be suggested:

a) An analysis of the make-up and composition of the well-known momentous increases that police department budgets (and CJS expenditures, in general) experienced during the last decade.

b) The major trends in salaries and benefits for CJS personnel and the relationship--if any--between wage gains and the various unionization movements that have taken place among police and among correctional system employees.

c) Internal trends in CJS employment such as changes in the relative proportions of uniformed and civilian employees and of ranking officers and regular patrolmen in police departments, or of clerical and professional personnel in the court system.

d) The relative allocation of local and state resources to the CJS as measured by the proportion of local and state budgets spent for this purpose. A review of trends in this respect will provide an indication as to the position that the crime problem occupies in the list of national priorities in view of widespread public concern.

e) The details of the allocation of police manpower among various possible functions such as preventive patrol, response to calls for assistance, investigations, clerical tasks, enforcement of traffic regulations, etc.

f) The marginal cost on an annual and present value base of additional CJS employees by function and specialty based on the current status of salaries and benefits. In a similar manner, the marginal cost of manning additional functional positions, e.g., of fielding an around-the-clock foot patrolman or of an around-the-clock one- or two-person police car.

g) The relationship of "size" to CJS expenditures. This is the important question of whether any economies of scale may exist in the CJS. While the problem has been partially investigated with respect to police departments (see previous section) evidence to date has been far from conclusive.

h) The budget fractions allocated to capital investments and to current expenditures (the latter consisting mostly of personnel costs) in different parts of the CJS. Also the historical role, if any, that recent funding from the Law Enforcement Administration has played in modifying these fractions. These federal funds, intended as they are to promote "innovation" in the CJS, would--at least theoretically-- be more likely to increase capital investments in the form of faciilties and, especially, such expensive equipment as computers, communications apparatus, car locator systems, etc.

It is believed that the additional expenditures for the creation of an expanded data base, as recommended here, would be well justified in

the long run, even if that base would only serve to help clarify some of the questions that were just posed. In addition, however, the data base will also support one of the two aspects, namely the one related to costs, of the cost-effectiveness studies that will be discussed in the next sections.
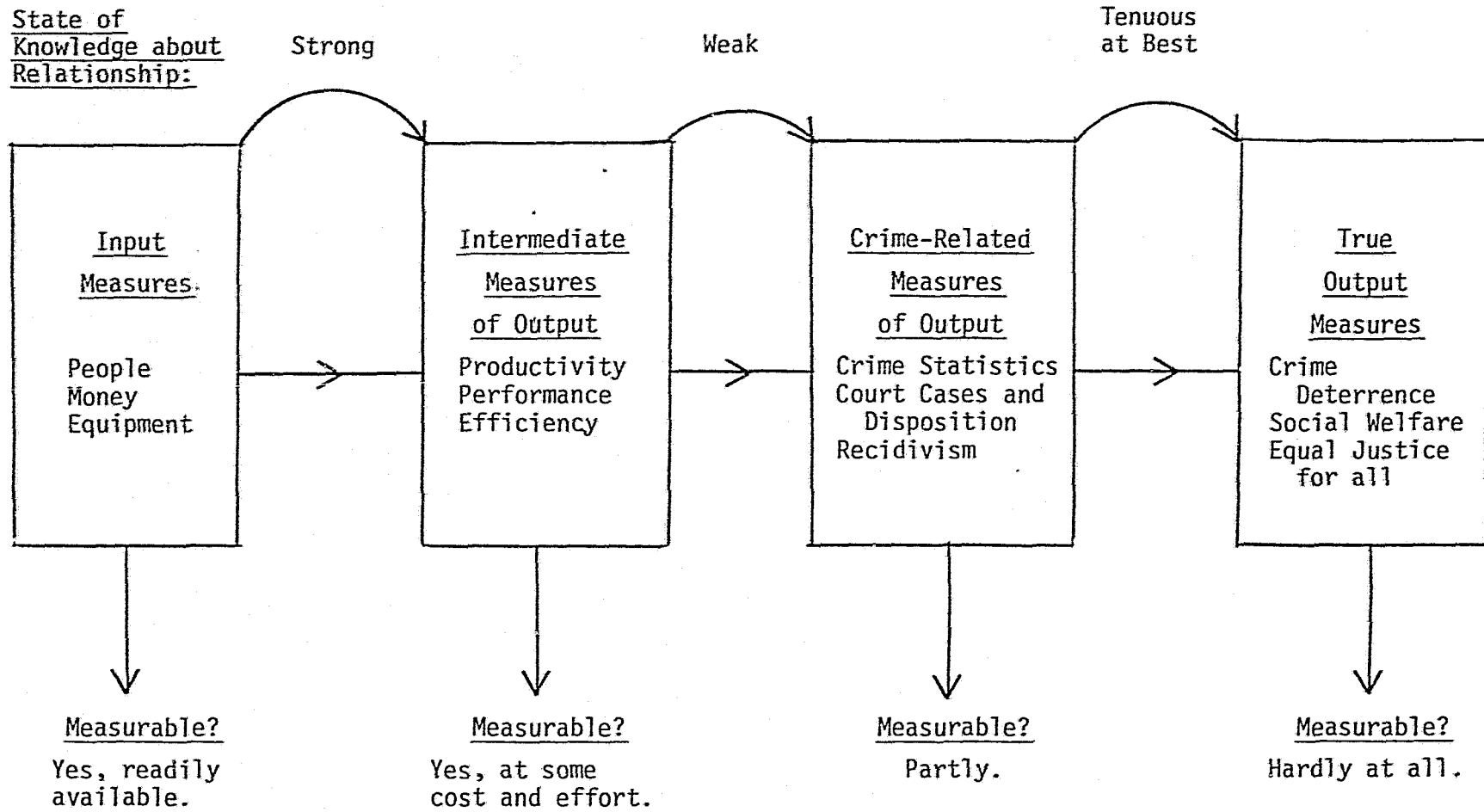
Measuring the Outputs of the CJS

Types of Measures for the CJS

Figure 1 presents one possible conceptualization of the various types of measures that could be used to describe the different parts of the CJS. Four categories of measures are identified: input measures, intermediate measures of output, crime-related measures of output and "true" measures of output.

We have already discussed various input (or "resource allocation") measures in earlier sections. It is feasible to collect information about the manpower and expenditure costs of the CJS to practically any desirable level of detail, including the specific allocation of funds and personnel to distinct identifiable tasks. In most cases, this - information is readily available--at least at the local level--and can be obtained through the use of appropriate surveys.

At the opposite end of the spectrum, one can theoretically describe measures of the true effectiveness of the CJS. It would be erroneous to use such measures as changes in crime indices for this purpose. The

State of
Knowledge about   Strong   Weak   Tenuous
Relationship: at Best

Input Measures	Intermediate Measures of Output	Crime-Related Measures of Output	True Output Measures
People Money Equipment	Productivity Performance Efficiency	Crime Statistics Court Cases and Disposition Recidivism	Crime Deterrence Social Welfare Equal Justice for all

Measurable?   Measurable?   Measurable?   Measurable?

Yes, readily   Yes, at some   Partly.   Hardly at all.
available.   cost and effort.

Figure 1

number of crimes and other similar measures are insufficient indicators
of the true outputs of the CJS. Higher level measures of effectiveness
are desirable: as with most large-scale social systems, so with the CJS,
too, it can be argued that its true objective is the "maximization of
social welfare," in this particular case through the prevention and
deterrence of crime and through the provision of a fair and equitable
system of justice for all.

Unfortunately, it is practically impossible to obtain any quanti-
tative measurements of outputs which, to begin with, are as "hazily"
defined as, for instance, the terms "social welfare" or "crime prevention"
are. Even after attempting to express these global outputs in more
specific terms, experience has shown that the situation with regard to
quantitative measurement does not improve perceptibly. For example,
Blumstein [14] has suggested a measure called "social disruption" as a
high-level indicator of output for the CJS. After describing this
measure, however, Blumstein concludes as follows:

> Having thus identified this higher measure of "social
> disruption," its complexity and its many unquantifiable
> features preclude operating with it analytically at this
> time. Nevertheless, considerable value derives from
> considering these issues, for they pervade many later
> considerations, such as those relating to technological
> approaches to improving the effectiveness of crime contro ,
> perhaps at the expense of privacy or due process
> considerations.

The last sentence, in this quote coincides with the authors'
perception with regard to the potential usefulness of high-level output
indicators in planning for the CJS: they should be viewed as providing

general qualitative guidelines for setting of policy goals. However, their use in effectiveness comparisons between specific alternatives should be ruled out at this time as impracticable. Inability to measure true outputs and our present complete lack of knowledge on how to predict the effect of alternative allocative decisions (CJS inputs) on the true outputs--as indicated at the top portion of Figure 1--make such a conclusion inevitable.

One, then, is forced to turn to the other two types of measures identified on Figure 1. Of those, the crime-related measures of output have probably attracted most of the attention in the past. They include such quantities as crime indices (crime-specific or aggregate), statistics on the disposition of cases in the court system, and indicators of the effectiveness of the corrections system through recidivism rates, etc. The major advantages of these measures are that they are readily under-standable and, probably more importantly, are perceived to bear a more or less direct relationship to the true outputs of the CJS. For instance, most would agree that a reduction in the crime rate (if not achieved at the expense of civil liberties) also implies an increase in social welfare. Unfortunately, crime-related measures of output also suffer from two major deficiencies:

    i) They are only partly measurable in many instances. The recent surveys of the LEAA, for instance, on the true incidence of crime in major cities indicates that reporting of crimes depends on a complex set of factors not the least

of which is the citizens' own perception of how effective the
CJS is. In any case, the surveys clearly indicate that crime
is grossly under-reported but it is difficult to determine
just by how much. This point is discussed in considerably
more detail elsewhere in this report.

ii) Even more crucial with regard to the performance
of cost-effectiveness comparisons is the great difficulty,
in view of our present state of knowledge, that is involved
in predicting the effects of resource allocative decisions
on crime-related statistics. A specific example, which has
often been used before, will help clarify this point:
Assume that city X has decided to increase the number of
police vehicles it fields during the peak crime-period of
the day. It is, of course, quite simple to compute the costs
of this decision in terms of increased manpower, equipment
and funding requirements. (These are the input measures.)
Given a description of the spatial distribution of calls for
police assistance, of city X's geography, and of the
dispatching policy followed by the police department in question,
it is also possible, using the methodology developed in recent
years by Larson [15] and others, to predict quite accurately what
effect this decision will have in terms of a reduction in
police response times, i.e., the delay between the time a call
is received and the time when a police car first arrives on
the scene. Police response time is one measure of CJS

performance or efficiency, (i.e., a measure that can be classified in the category of "intermediate measures of output" in Figure 1.) However, is is very difficult, with our present understanding of the "physics" of crime, to predict the implications, if any, of the reduced response time on the probability, say, of apprehending criminals and, consequently, on the chances for reducing the number of committed crimes. (The latter is a crime-related measure of output.) About all that is known is that reduced response times usually increase the chances of a successful arrest, but the exact relationship is far from clear and it is highly improbable that whatever functional relationship exists is a simple one.

This whole chain of associations is implied by the terms "strong" and "weak" on Figure 1 with regard to the state of knowledge on the relationships between input measures, intermediate measures of output and crime-related measures of output for the CJS.

Usefulness of the Intermediate Measures of Output

We turn now to what have been termed "intermediate measures of output" on Figure 1. Under this category we have included a large class of indicators of performance, efficiency, and productivity in the CJS. These indicators are connected to the true intended outputs of the CJS only through a series of logical inductions of the type already described

in the previous section. If one is willing to accept the validity
of these logical inductions--that is, the argument that there is a
direct connection between an efficient and smoothly functioning CJS
and an effective CJS--then the intermediate output measures can be
highly useful in monitoring the performance of the CJS and in providing
guidelines for a desirable allocation of resources within and among its
various components.

The last example in the previous section illustrates one of the
reasons for recommending increased attention to intermediate measures
of CJS output: The state-of-the-art in CJS analysis has reached the
point where, in many cases, it is possible to predict what the effects
on intermediate output measures will be of specific allocative decisions.

A second advantage of intermediate output indicators is that they
are measurable--at some cost and after some effort, as indicated on
Figure 1. The precise amount of effort required to obtain measurements
varies from one indicator to another. For instance, certain indicators
of police department performance such as "response times to calls for
assistance" or "personnel turnover during a year" are relatively easy
to deal with, either through observation of police operations (e.g.,
response times) or directly from departmental records (e.g., personnel
turnover). On the other hand, intermediate output indicators which to
some extent also incorporate the notion of "quality" (e.g., indicators
of "smoothness" of operations in the court system) are clearly much more
difficult to measure. Even in these latter cases, however, one can

devise simpler surrogate indicators which can be quantified and measured more easily.

A bewildering number of indicators related to performance, efficiency and productivity in the CJS can be (and have been) suggested. One cannot hope to deal with all or, even, with a substantial fraction of such indicators in practice. The correct approach is to select judiciously only a small number of indicators (= measures of inter-mediate outputs) making sure that each one of them is representative of a large "family" of other possible indicators and then deal with only the small sample at hand the rest of the way.

Some very thoughtful suggestions, very much along these lines, are provided--with specific reference to police departments--in the recent publication of the National Commission on Productivity entitled Opportunities for Improving Productivity in Police Services [16]. The authors of this report (Advisory Group on Productivity in Law Enforcement) have identified and described several measures of performance and productivity, a small group for each facet of police work. They, then, recommended that a national program be instituted for measurement and data collection with regard to these indicators. It is strongly suggested, in these recommendations, that the LEAA should act as the focus for this type of activity. A similar set of recommendations will be made at the conclusion of the next section, with regard to measurement, collection and dissemination of information about intermediate output measures for the entire CJS.

Effectiveness Comparisons Using Intermediate Output Measures

In addition to serving as descriptors of performance for the CJS, intermediate output measures in combination with input measures can be used as the basis for performing limited cost-effectiveness comparisons among alternative ways of allocating resources in the CJS.

We have already alluded several times to this particular type of cost-effectiveness analysis. Its main attractiveness is that, because of our ability to predict or measure the changes in the intermediate output indicators that result from specific changes in the allocation of resources, this type of analysis is both doable and believable. In fact, this seems to be the only type of cost-effectiveness analysis which is possible at all, given our present state of knowledge about the CJS. It is, therefore, altogether surprising that so little has been written or done in this area to date.

To the authors' knowledge, the only study which has explicitly addressed this problem is a brief but well-written study reported by :Blumstein [14] in 1969, on a cost-effectiveness analysis in the allocation of police resources. As an example, Blumstein has used the case in which a number of alternatives aimed at increasing the probability of apprehension on the scene are compared for a given police department. These alternatives may include the installation of more public call boxes to reduce the delay in calling the police, the assignment of additional "complaint clerks" to the police dispatching center, the use

of a computer to accelerate the dispatching process, the introduction of additional police cars, etc.

In terms of our classification scheme, the "probability of apprehension on the scene" is a crime-related measure of output. Due to the practical impossibility of obtaining an explicit quantitative relationship between each of the alternatives under consideration and the resultant change in the probability of apprehension, Blumstein suggests that the measure of effectiveness to be used could be "delay saved per dollar allocated" (i.e., reduction in response time per dollar allocated, using our earlier terminology). Thus, the measure of effectiveness in this example is an intermediate output measure (response time) and the measure of cost an input measure (dollars invested). A multitude of other similar examples can be offered.

It is believed here that the methodological foundation is already available and that the data base can be created for successful appli-cations of cost-effectiveness analyses of the type described to the CJS. Moreover, these comparisons of effectiveness need not be confined to the allocation of resources within any particular component of the CJS; in fact, a most useful application of the approach is as an aid to making decisions on how to allocate resources among the different subsystems of the CJS. In other words, ideally one should be able to determine the relative effectiveness of an extra dollar spent on, say, the processing of cases through the courts as opposed to a car locator system for a police department. (The state-of-the-art, of course,

makes it highly unlikely that such comparisons can be performed at the present time at such a level of detail, although more gross comparisons, e.g., money spent on the courts versus money spent on police, are not beyond the realm of possibility.)

A model of the CJS that is particularly well suited to the conduct of cost-effectiveness analyses has been suggested by Blumstein and Larson [17]. The detailed breakdown of the CJS into a number of inter-connected constituent parts makes this model an extremely convenient tool for this purpose. However, the details of how the model could be utilized are clearly beyond the scope of the present discussion.

On the basis of the discussion in the last three sections, the following additional recommendations can now be made:

i) The Law Enforcement Assistance Administration should sponsor studies and activities aimed at:

a) Identifying useful intermediate output measures (indicators of performance, productivity, and efficiency) for all aspects of the CJS.

b) Conducting carefully planned surveys and attempts at field measurement for the purpose of determining the current values of these indicators and the effects of various allocative decisions on the values of these indicators.

c) Exploring the use of intermediate output measures in combination with measures of input for the purpose of

performing comparisons among alternative allocations of resources in the CJS.

ii) The Law Enforcement Assistance Administration should act as a clearinghouse for the dissemination of information obtained from the activities described above to local and state CJS agencies and to the scientific community.

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III. IMPROVED ANALYSIS AND INTERPRETATION OF CERTAIN CJS STATISTICS

In this second section our focus is on system-level performance measures and statistics, many of which have multi-year consequences. They aim at improving a citizen's perceptions of the magnitude of crime victimization risk, of the long-term consequences of alternative correctional programs, and of other CJS-related issues which can be clarified by using quantitative techniques that are somewhat different from those in common use today. They are useful not only in system-level evaluation, but in other system-level considerations as well, for instance the public's view of the total magnitude of the crime problem and the amount of national resources devoted to its solution.

Public views about the dimensions of a problem, while not shaped solely by official statistics, are clearly not uninfluenced by them. Thus criminal justice planners and, indeed, all other citizens should take interest in the question: do statistics currently released about the amount of crime--and the response to it by police, courts, and corrections systems--give a graphic yet accurate view of the true state of affairs? And when the answer is "no," what changes should be made to make the numbers more informative?

We believe that many crime statistics now in circulation do not serve their ostensible purposes, which is primarily for evaluating the effectiveness of the CJS and its constituent parts. This happens largely because of two problems: one, quite widely noticed, concerns

the accuracy of much of the data; skepticism is often so great as to
recall the old saw "lies, damn lies, and statistics." The other problem,
somewhat more subtle, is that the indices about crime calculated
from raw data are often inherently inappropriate--opaque at best and
misleading at worst. But we believe further that both of these problems
could be greatly reduced if certain changes--all entirely feasible--were
made in the ways information about crime is reported. We attempt below
to justify these premises by examining in detail some prototypical cases.
Then we discuss some steps LEAA can take to ensure that accurate yet
comprehensible crime statistics are freely available.

Murder Victimization

As the first example of a situation where current statistics may
be inadequate, we consider the incidence of murder, clearly the most
serious of the seven index crimes. For murder, the accuracy of raw data
is not greatly questioned; there is widespread agreement that reported
numbers of willful homicides are generally close to the mark. To express
murder tolls more meaningfully, the number killed in a geographic
area is often compared to its total population. The standard statistic--
used by the FBI and others--is the number of murders per 100,000 residents
per year. Thus, for instance, in Baltimore in 1972, the murder rate was
given as 36 per 100,000.

Let us examine that statistic for a moment. Its complement is the
observation that for each 100,000 residents of Baltimore, 99,964 were not

murdered in 1972. This might give comfort to local residents for they might infer that, not only are they very safe over one-year periods, but their chances of ever becoming murder victims are exceedingly small.

There is, unfortunately, a potential fallacy in such reasoning. If one considered all single Americans over 18, the fraction who get married in a particular month is very small. Yet, sooner or later, the vast majority do get married. Small probabilities accumulated over long periods may yield large probabilities that events ultimately occur. And, indeed, a randomly-chosen person who lives in Baltimore from birth, confronting homicide* at the 1972 level every year, will eventually die of murder with probability 1 in 38.

How many people, aware of the 36-per-100,000 figure, realize the 1 in 38 statistic it implies? Evidence the authors have seen suggests the number is very small. Casual inquiries to many people in the Boston area revealed a peculiar pattern: people tended, if anything, to overestimate Boston's annual murder rate, yet to underestimate very greatly (usually by 95% or more) the corresponding murder probability for a lifelong Bostonian. An official in the crime analysis bureau of a large American city who spoke to one of the authors, found 1 in 1,000 plausible as an estimate of lifetime murder-risk in one of that city's most dangerous parts; the actual risk is over 40 times as high. A most fascinating misunderstanding of the annual murder rates appeared recently

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* By "homicide" we mean only willful homicide, and exclude manslaughter by negligence.

in, of all places, The New York Times (4/28/74). In an otherwise solemn

report about murder in Detroit--one of the most homicidal cities in the

world--its reporter stated "if you live in Detroit you have a better than

2,000 to 1 chance of not being killed by one of your fellow citizens."

He went on to note that "optimists searching for perspective in the

statistics of murder insist those odds are pretty good." [Emphasis added.]

Unfortunately, however, the estimate 1 in 2,000 for a citizen's

murder probability is just Detroit's annual murder rate in the form 1 in

X. It would be correct only if a Detroiter's life expectancy were

exactly one year. A randomly selected Detroiter's lifetime chances of

becoming a victim of willful homicide are actually about 1 in 28.

When misunderstanding of the statistic is apparently widespread, we

submit that murders per 100,000 per year is not the appropriate figure for

the FBI (and others) to publish. What statistic would be better? One

obvious possibility is the answer to the question: assuming current

patterns persist forever, what is the probability that a randomly-chosen

baby, born now in region X, will eventually die of murder if (s)he lives

there all his(her) life? People tend, we believe, to ask themselves an

inchoate version of this question when they hear the current figures; the

problem is that now they often answer very wrongly. Alternatively (or

additionally) one could calculate the drop in such a baby's life

expectancy because of homicide; this figure would reflect the special

tragedy that murder victims are usually young. Either of these
statistics can be obtained easily from raw data; both would describe
clearly and accurately the danger murder poses now.

Certain criticisms can be (and have been) raised against providing
murder statistics in the form suggested above. The homicide probabilities
obtained would indicate only a macroscopic "average" risk, and not
reflect the great dependence of murder risk on race, sex, income,
life style, etc. People who note this sometimes forget that the same
criticism applies to the region-wide statistics currently in use. In
any case, there is no problem in breaking populations down to as many
subgroups as desired, and making the probabilistic calculation for each
group.

Another line of complaint is that these descriptions of murder
risk have no policy implications. This is true, in a short-term
day-to-day sense, but making clear to the public how much murder there
is might well raise the intensity of attempts to reduce killing.* In
any case, other statistics about murder could be more directly valuable
in evaluating public policies; some are described later in this chapter.

Victimization for Nonlethal Violence

For homicide, the key problem is not the accuracy of statistics,
but of understanding their implications. With other violent felonies,

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* Analogous statistics greatly changed the American public's
attitude toward cigarette smoking.

however, the situation is somewhat reversed. People who learn that
over 115,000 robberies, rapes, and aggravated assaults--one for each
70 residents, took place in New York City in 1972 tend to sense that, at
that rate, it would not be surprising for New Yorkers to fall victim
to such violence roughly once in their lives on the average. But many
people apparently consider the official statistics about nonlethal
violence gross underestimates, because of underreporting by the public
and, sometimes, deliberate distortion by authorities for political
reasons. Even former Attorney General Richardson, releasing the 1972 FBI
figures, was openly skeptical of their accuracy. In such circumstances,
reports of a 10% drop in assaults, for instance, are often greeted with
derision.

The crime victimization surveys begun recently by the LEAA are
potentially of great value in this connection. They may make the problems
of underreporting by the public and manipulation of data by officials far
more tractable in the future. Underreporting is dealt with quite
explicitly in the surveys; those who declare themselves victims of recent
crime are asked at once whether they informed the police of their trouble.
And the very existence of such independent estimates of crime levels may
reduce the incentive to distort official statistics, lest every new
survey produce a new scandal.

But to fulfill this important role, it is necessary that the
accuracy of LEAA surveys be beyond serious question. At the moment, it
is not clear that this is the case. Chart 1 below compares two estimates

Chart 1

AGGRAVATED ASSAULT 1972

City	Expected # of Crimes Reported to Police (LEAA)	Actual # of Crimes on Police Blotter (FBI)	Ratio of Expected/Actual
Atlanta	2,100	2,100	1.00
Baltimore	4,100	6,400	.64
Chicago	12,700	11,200	1.13
Cleveland	2,900	2,000	1.45
Dallas	3,400	4,600	.74
Denver	2,900	1,900	1.53
Detroit	7,800	6,100	1.28
Los Angeles	13,400	15,100	.89
Newark	800	2,600	.31
New York	11,700	37,100	.32
Philadelphia	9,300	4,600	2.02
Portland	1,700	1,300	1.31
St. Louis	2,300	3,200	.72

Sources: FBI Uniform Crime Reports (1972)
LEAA Crime in Five Largest Cities and Crime in Eight American Cities (1974)

of the number of aggravated assaults reported to the police in 13
major cities in 1972. The first estimate is based on LEAA surveys in
those cities in which an extrapolation was made from the sample data to
estimate the number actually reported to police; the second is the
official police figure reported to the FBI. It should be stressed that
the LEAA figures listed have already been corrected for estimated under-
reporting; in other words, one might expect the two numbers for each city
to be roughly equal.

Differences between LEAA and police reports on aggravated assault in
a city might be anticipated for the following reasons: (1) the LEAA
estimates are based on random sampling, with its inherent potential for
sampling errors, (2) people surveyed by the LEAA were asked about their
experiences in the last twelve months which, in some cases, overlapped
some of late 1971 or early 1973, and (3) only city residents were questioned
by the LEAA, so crimes against suburbanites and out-of-towners presumably
did not enter LEAA totals. But even taking these factors carefully into
account, a liberal estimate of the 95% confidence interval for each ratio
in the chart's final column is .80 to 1.15 (i.e., the probability a ratio
falls outside the range (.80, 1.15) is about 1 in 20). But the actual
percentage of ratios in the range (.80, 1.15) is not 95 but 23 (!).
Similarly, there is in theory only about a 1 in 40 chance that any of
the 13 ratios falls outside (.70, 1.22); in fact; fully 8 of them do.
We have, therefore, disagreements of great statistical significance.

What are the reasons for these disagreements? Peculiarities in police department records? Lack of randomness in LEAA sampling? Misunderstandings or errors of recollection by LEAA survey respondents? These and other possibilities come to mind at once. While the causes of these inconsistencies (and others that arose in data for other crimes) may never be completely understood, their existence should prompt the LEAA to perform a complete scrutiny of its surveying procedures. Controlled experiments in surveying (e.g., with a subgroup of respondents more totally assured of anonymity than respondents are now) and other possible modifications of present practices should not be excluded. The LEAA should realize that, unless its methods of polling inspire general confidence, discrepancies between its results and those of other sources will only lead to shrugged shoulders, and the relegation of LEAA data to the potpourri of other numbers widely regarded as useless.

Hopefully, these "growing pains" of the LEAA victimization reports will soon diminish. But the investigations cost roughly $2,000,000 per city, and thus clearly cannot be performed in every community every year. The most realistic approach to getting accurate crime figures on a year-to-year basis in a given community is to synthesize sensibly the insights of LEAA survey and traditional police statistics.

How should such a synthesis be made? The appropriate procedure may well vary from crime to crime; we consider below one specific offense-- aggravated assault with injury. The actual results of the 1972 LEAA survey will serve as the basis for the discussion. As noted, the

accuracy of this aggravated assault data is somewhat uncertain; our purpose here is to illustrate a general procedure rather than obtain exact results about this crime.

The LEAA estimated that in 1972, 55,100 aggravated assaults with injury (hereafter AAI's) took place in the thirteen cities it examined, and that 60.1% of these felonies were reported to the police. There were some variations in reporting rates between different cities but they were not statistically significant because of sampling error. Indeed, the observed pattern of variation greatly resembled what one would anticipate from sampling randomness alone. Under the hypothesis of a true 60.1% reporting rate in each city, the expected numbers of rates more than one standard deviation and two standard deviations from 60.1% are, to the nearest integer, 4 and 1 respectively (out of a total of 13). The actual numbers were precisely 4 (Chicago, Los Angeles, New York, Portland) and 1 (Chicago).

It thus appears that, based on the survey results, the fraction of AAI's reported was quite constant over the different cities. Great disparities in city sizes and locations, in AII rates, in ethnic compositions, and in police effectiveness (under certain criteria) were virtually irrelevant in the actual reporting patterns. Two hypotheses would seem plausible in consequence of this data: (1) the reporting rate for this felony was about 60% in 1972 in all large American cities; including those not surveyed and (2) the rate of reporting in any given city has not changed appreciably since then. Hypothesis 2 seems reasonable because changes in

any city since 1972 are probably small compared to its differences in
1972 with members of the group of surveyed cities, all of which had
about the same reporting rates. The two hypotheses above would imply
the approximation:

$$\text{\# of AAI's reported to police in City X in Year Y} \approx .6 \times \text{actual \#}$$

or, equivalently,

$$\text{Actual \# of AAI's in City X in Year Y} \approx 1.67 \times \text{Reported \#}$$

Obviously, follow-up surveys should be performed every several years
to validate (and, if necessary, revise) such hypotheses and their
resulting estimates. But until contradictory results emerge, the
approximation above would seem appropriate if the surveys are correct.

As noted earlier, it is not at all clear that the number of AAI's
actually reported is the same as the number officially recorded.* Thus
just multiplying an AAI figure from, say, the Uniform Crime Reports by
1.67 need not yield an accurate estimate of the true AAI total. But,
as we said earlier, differences between the number reported and the number
on police blotters may well "wither away" because of the existence of
independent procedures to estimate crime levels. This salubrious result
may be achieved even if surveys are conducted as rarely as once a decade in
a particular locale. (We should stress, by the way, that we are discussing
falsification of data as a theoretical problem; we do not believe the
surveys sufficiently exact at this time to demonstrate clearly that

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* Here we are referring to deliberate police underreporting.

distortion exists.) Hence, if present patterns continue and have been identified correctly, we foresee a time when 6,000 AAI's on police blotters can be taken confidently to reflect close to 10,000 AAI's overall. Again, the discussion above should be viewed as a somewhat hypothetical simple example of how general insights can be drawn from particular survey results.

We are hopeful that raw police figures on each crime type and the corresponding estimates of true totals including unreported crime will appear in reports released in the future. The "correction factors" used should be justified carefully; they may often be far more complicated than the simple constant 1.67 that worked so well for the AAI data.

Once these corrections are made, estimates can be prepared, for instance, of the expected total number of victimizations a randomly-chosen baby, who lives his life in region X at the current risk level, will sustain. Specific breakdowns by race and sex, income, etc., can be made. We have noted that annual rates per 100,000 people are not as potentially misleading for other felonies as for murder, but the lifetime statistic above still seems a desirable quantity for explicit calculation.

Evaluating Deterrence Policies

So far we have discussed statistics about the prevalence of crime. But transparent statistics are also needed to describe and evaluate society's response to crime: the efficiency of the police, the effectiveness of the courts, the corrective effect of correctional programs, the

deterrent effect of the laws. The problems in this area are varied and complex; we will not attempt an exhaustive discussion here. We will consider instead a "random sampling" of topics and some new statistics that are potentially illuminating. Our suggestions on the subjects below, however, often imply what we would recommend in areas not directly mentioned.

The deterrent effect of particular measures against crime is a subject of bitter and widespread controversy. It would be fatuous to suggest that statistical measures can end such debate, but they can help clarify the raw data that is available. We turn once again to the particular crime murder. Public interest is currently high about possible steps to reduce killing, and might well increase greatly as true victimization chances become known. An imminent Supreme Court decision may restore the death penalty for first degree murder in over half the states in the Union. Gun control legislation is now pending at many levels of government. Before any such measures come into being--when there could not be accusations of "ex post facto" criteria--it would be desirable to create a statistical framework to help evaluate their deterrent effects.

Many laws designed to reduce willful homicide may arise at the state level. And while many states seem ready to adopt new regulations, many others do not. Thus comparing changes in murder levels in different states may give some indication whether new laws are working. A challenging question is how such comparisons should be made.

A crude statistic for comparing two states is the ratio of their annual homicide rates; such a statistic, however, may not be sensitive enough to evaluate new laws in one of them. FBI homicide data makes clear that, over the nation, murder victimization rates are unusually high in cities, among blacks, and among the poor. (These are hardly distinct categories; many blacks are poor and live in cities.) Thus if, between two points in time, two states change differently with respect to degree of urbanization, ethnic composition, or economic conditions, one would anticipate changes in their murder rates ratio quite independent of changes in laws or forms of penalty. One desires that any comparative statistic in use should automatically correct for such changes (and others).

With appropriate care, one can introduce an "adjusted" ratio of murder rates between states that "weeds out" the effects of overall national patterns. This ratio will still often differ greatly from the number 1 because of nonquantifiable local trends (e.g., "tradition of violence") superimposed on the national. Consider, for instance, the states Indiana and New Hampshire. In 1972, the per capita murder rate in Indiana was 3.53 times that of New Hampshire; when, however, one gives proper weight to the fact that Indiana has six cities (Indianapolis, Gary, Hammond, Fort Wayne, South Bend, and Evansville) with over 100,000 people compared to New Hampshire's zero, and the (somewhat correlated) fact that Indiana's ethnic distribution differs substantially from New Hampshire's, one obtains as a first estimate of an adjusted homicide ratio the number 1.49. This number (actually its more precise counterpart)

might merit watching if Indiana restores the death penalty but New Hampshire does not.

There are several pitfalls one must avoid in calculating these adjusted ratios. Beyond noting changes in urbanization, economics, age, race, and sex distributions, one should specifically correct for migrations from other states with different "traditions of violence." And while one wants to extirpate interstate differences reflecting national patterns, one must not forget that national patterns may themselves change because of the laws whose effects are being investigated. (E.g., if urban states ban handguns in greater proportion than rural ones, and if the ban actually does diminish murder, the relatively higher homicide risk of city dwellers may be reduced. If, because of this trend, one used a smaller correction for urbanization in the adjusted murder ratio, one could erroneously wind up concluding that the ban was ineffective.) One must also be careful to distinguish meaningful changes in the ratios from the effects of random fluctuations. (New Hampshire had only 13 murders in 1972; random fluctuation about this figure could change the ratio with Indiana 20% or more between two consecutive years.) But if prepared carefully by experts, these ratios (and charts describing their evolution) could graphically inform the people if any antimurder measures are actually working.

Evaluating Correctional Measures

A panoply of statistics about the operations of police and courts are floating about; perhaps too many for citizens to absorb. For each crime, we hear numbers about the fraction of offenses cleared by arrest, about bail policies and pretrial detention, about sentencing policies for those convicted. One major question these numbers concern is: how much time incarcerated is actually meted out to people who commit a given crime?

A statistic particularly suited to answering the last question is the average amount of time incarcerated, distributed for each offense of type X. Unsolved crimes would contribute zeroes to this average; prison terms and pretrial jailings would enter the statistic through their average lengths. Thus, for example, if 40% of type X crimes are solved (i.e., end with convictions) and the expected time incarcerated is two years per offender, the average time incarcerated per offense is 2 x .4 = .8 years. This is the type of expected value statistic calculated at numerous stages of the Blumstein-Larson CJS model (A. Blumstein and R. Larson, "Models of a Total Criminal Justice System," Operations Research, vol. 17, March-April, 1969, pp. 199-232), which is now made operational as the JUSSIM model.

This statistic combines sensibly the probability of arrest and the expected consequences of arrest, two factors presumably considered by many would-be criminals. If this quantity were calculated for several

different localities, interesting new correlations of incarceration levels and crime levels might emerge. One could also calculate an average cost level for each <u>victim</u> of a type-X crime, where cost is measured in time spent recovering from injuries, time spent at work recouping financial losses, time spent testifying at trials, etc. The ratio of average penalties for criminals to those of their victims might well interest the people, especially when this ratio falls below one.

Recidivism

One word seems to pop up in every discussion of correctional programs: recidivism. And the statistic that seems to dominate discourse is the probability that a given offender will commit crime again. While of obvious interest to behaviorists and the offender's parents, it is not clear that this statistic is very useful for the public-at-large. Future crime levels clearly depend on an offender's overall chances of recidivism, but we need some measure of the change of this probability as a function of his age. A recidivism rate (new crimes per type-Z offender at age X per year), by adding a time dimension, would enrich the description of the problem. The popular statistic is further weakened because the relationship between recidivism probabilities and crime levels in the future is not the obvious one; a 10% drop in the first quantity can imply a 25% drop in the second.*

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* See, for example, "Problems in Modeling and Measuring Recidivism," A. Blumstein and R.C. Larson, <u>Journal of Research in Crime and Delinquency</u>, Vol. 8, No. 2, 1971, pp. 124-132.

We pause now to reflect on something ironic. For murder, probabilities of victimization seem more useful than annual rates, yet the popular statistic is the annual rate. For recidivism, an annual rate seems more useful than a repeating-probability, yet the probability is the widely-quoted figure. This curious phenomenon makes sense if we consider that, given the way data are collected, it is easier to find annual murder rates than victimization chances while recidivism probabilities are more readily obtained than annual rates. Still, for something as serious as crime, ease of calculation might not be the best criterion for choosing statistical indices.

Recidivism rates, however, are but means to a statistical end. In comparing two correctional programs, a good question to answer is: given the current pattern for generating first-offenders, and given the recidivism patterns for each program, what is the expected difference in total crime over the next (say) 50 years? The difference should be expressed both in absolute magnitude and as a percentage. If the more successful program is also somehow the more costly, this statistic would give some reasonably precise idea what the extra expense might buy.

Conclusions

The previous sections of this chapter have attempted to argue the need for certain programs. Specifically, we believe that LEAA should adopt as long-range goals:

1) <u>The development and dissemination of new statistical indices</u>
    <u>to illuminate raw data about crime levels and to help evaluate</u>
    <u>the effectiveness of the police, courts, and corrections systems.</u>

The "crime clocks" already included in the FBI Uniform Crime
Reports set a precedent for efforts of this kind. The LEAA should
work with the FBI and other relevant agencies to provide for
implementation of the new measures in official reports, not generally
as replacements for current statistics but in addition to them. In
the shorter run, we feel the LEAA should support research efforts
to develop appropriate statistical indicators in all areas and to
prepare "computer packages" to allow their calculation by government
agencies.

2) <u>The improvement of the conduct of LEAA victimization surveys to</u>
    <u>the point where their accuracy cannot seriously be challenged.</u>

An intense effort should be made to identify and avoid the
sometimes very subtle problems in the massive survey program. While
statisticians, political scientists, computer experts, sociologists,
etc., are clearly relevant to such an effort, so are police chiefs,
elected officials and not a few individuals who are genuinely
"street smart."

3) <u>The development of a set of statistical testing procedures to</u>
    <u>measure quantifiable effects of innovations in the area of</u>
    <u>criminal justice.</u>

Many of the changes in penalty structures, in corrections
policies, and in court operations that have been proposed are
intended to have specific quantifiable effects. LEAA should
encourage the systematic recording and reporting of certain
statistics that, while not tied specifically to any given program,
will be of direct help in assessing the program's effectiveness.
[Unlike the indices described in 1) above, such statistics may
not be inherently "illuminating," but watching directions in which
they move over time may be useful.] The adjusted annual reporting
of interstate homicide ratios is a specific example of such a
de facto statistical test. We believe the LEAA should support
efforts by researchers to devise such procedures, and should work
to ensure their systematic use in appropriate annual reports.

IV. OPERATIONAL PERFORMANCE MEASURES FOR EVALUATION

In this third section, we shift focus from system-level and multi-year considerations to problems of evaluation at the agency level. In particular, we address the role of quantitative models in the evaluation process--with particular reference to police departments, but also LEAA state planning agencies and programs they may undertake in any component of the CJS.

We identify two different types of evaluation at the local or state level--evaluation of experimental programs and evaluation of on-going (routine) day-to-day operations. First we discuss experimental evaluations, then day-to-day evaluation, and finally some steps that could be taken to develop these ideas toward implementation.

Evaluation of CJS Experiments

In recent years, we have seen a trend developing toward the acceptance and use of the scientific method in acquiring knowledge about the CJS and its component parts. This entails the identification of a problem area, the listing of conjectures or hypotheses regarding system structure and operation, the design of an experiment to test these hypotheses, the execution of the experiment, and the evaluation of results. While the term "evaluation" is often only identified with the last of these steps, we will utilize a broader meaning referring to the entire process of experimental design, execution, monitoring, and formal (final) evaluation.

In performing an experiment in part of the CJS, the entire jurisdiction under consideration (e.g., city, county, state) serves, in effect, as a laboratory and the number of "actors" and resources used is usually large. Thus, the experiments tend to be extremely expensive and time-consuming. This, plus the fact that the experiments are non-repeatable (at least under identical conditions), make it very important that the design of the experiments be extremely well thought out. Besides, the publicity that such experiments receive--just by virtue of being performed in the field-- and the consequent major impact that they are likely to have on local agencies throughout the country, raise the stakes of assuring against serious experimental errors to unusually high levels.

It is our strong belief that the quantitative models developed in recent years at MIT, Rand, Carnegie Mellon and elsewhere can play an important role in assisting in every phase of the aforementioned experiments, from initial planning to the final evaluation of results. To implement this concept, it would be necessary to perform research on the use of quantitative models in experimental design and to report the results in nontechnical handbooks for CJS personnel. The emphasis would be on the description of a normative experimental approach in which models would continually be used by the experimenters to design, monitor, evaluate, and revise the experimental procedures in the field. It would be useful to illustrate this approach as well as to make a clear case for the usefulness of the quantitative models in this respect, through a detailed

review of some recently performed and highly important experiments,
such as the Kansas City Preventive Patrol experiment.*

One type of experiment that could provide a focus for the work would
typically deal with reallocation of resources of a police department and/or
with a revision of the operating policies of these resources. Listed
below, as an illustration of the types of issues which could be investigated,
are a few examples of the use of quantitative models in such experimental
contexts:

(a) Simple, rule-of-thumb techniques can be used to check
some of the initial basic premises of the experiment. For
instance, whether four police cars in a district make
available four times as much preventive patrol time as a
single car.

(b) More sophisticated analyses based on the newly developed
hypercube queuing model** can be employed to try to assess
in detail whether the conditions under which an experiment
would be conducted actually conform to the conditions that the
experimenters have in mind.

(c) During the performance of the experiment itself, a
parallel use of quantitative models and tools is helpful

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* G. Kelling, T. Pate, D. Dieckman, and C. Brown, "The Kansas City
Patrol Experiment: A Summary Report," Police Foundation, Washington, D.C.,
1974.

** R.C. Larson, "A Hypercube Queuing Model for Facility Location and
Redistricting in Urban Emergency Services," Computers and Operations Research,
Vol. 1, pp. 67-95, 1974.

in monitoring progress (through comparison with field results).
In fact, one of the primary uses of these tools is an "adaptive
feedback" mechanisms, that is, as means of adjusting
experimental design parameters in the desired direction.

(d) Finally, and very importantly, the significance of the
results of an experiment should not be evaluated (as,
unfortunately, they are all too often) solely on the basis of
"before" and "after" baseline data. Instead, a more proper
method of evaluation is a comparison between the results
predicted a priori (on the basis of whatever theories or
beliefs prevail prior to the conduct of the experiment) and
the actual measurements in the field. Quantitative models
provide a unique tool for producing in detail the a priori
predictions necessary for the successful conduct of the
experiment.

As an example of the use of models to produce causal relationships in
evaluative studies, consider a simple example from the corrections
component of the criminal justice system (CJS). It has been documented
(by Wolfgang and Figlio* and others) that multiple offenses (measured by
arrest or some other formal contact with the criminal justice system) can
be modeled as a Markov process to predict the future criminal career
profiles of offenders. Thus, if we say than an offender leaving the CJS

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    * M. Wolfgang and R. Figlio, Delinquency in a Birth Cohort, University
of Chicago Press, 1972.

has a recidivism (repeat) probability of X, then the average number of repeats over the criminal career of the offender can be shown (using Markov analysis) to be $1/(1 - X)$. Now consider an experimental corrections program that is to be evaluated. Suppose that the "failure" rate from the corrections system prior to the experiment was 90% (a high value, but one found in some correctional institutions). After the experiment, the "failure" rate was only reduced to 80%. An evaluator comparing the before and after "baseline data" may be tempted to say that the Y millions of dollars spent on the experiment could hardly be justified since there is only an 11% decrease (from 90 to 80%) in the key outcome variable. However, using the model for future criminal career behavior, one finds that the average number of future repeats per offender is reduced from $1/(1 - 0.9) = 10$ to $1/(1 - 0.8) = 5$, fully a 50% decrease. Here the model suggests a simple manipulation of the baseline data to predict a more fundamental outcome measure--the number of future contacts with the CJS. In the same way, models can be used in the evaluation of experiments in other parts of the CJS.

Returning to the police area, in our interactions with police personnel we have found that even the simplest of quantitative models of police patrol can provide insight into operational behavior of the system not readily available from other means. In several instances these insights have revealed the inadequacies of long-held rules of thumb or points of view. We give four examples:

Example 1:   Statement: "Doubling the amount of patrol resources

doubles the amount of preventive patrol."

The reasoning behind this statement is widely accepted

in police circles today. Yet it is clearly incorrect

as we can show by a simple counterexample: Consider

an isolated patrol sector with one unit assigned to

it. Suppose the average call-for-service workload

per eight-hour tour is four hours and the time on

preventive patrol is four hours. Doubling the patrol

resources (i.e., adding a second unit) would result in

four hours (total) of call-for-service time and 12 hours

of preventive patrol time. Here a doubling of resources

yields a tripling of preventive patrol effort. Other

examples can be presented in which doubling the patrol

resources increases the amount of patrol by a factor of

4, 5 or even 10. The simple traditional argument is

incorrect because it neglects the effect of units

spending time on calls for service.

Example 2:   Statement: "Doubling the amount of patrol resources

halves average travel time."

This "linear" argument is incorrect because average

travel time varies as the square root of the resources

allocated per square mile. A doubling of resources

decreases average travel time by about 30%, not 50%.

Example 3: Statement: "The fraction of dispatches which are intersector (cross-sector) dispatches is usually small enough to ignore in most cases."

In police circles it is preferable to keep intersector dispatches at a minimum in order to maximize an officer's contact with his "own" sector, thereby enhancing "sector identity." In early traditional police administration texts (such as O.W. Wilson's), intersector dispatches were often ignored, largely because at the first time of writing of these texts (usually the 1930's or 1940's) the workloads of urban police departments were nowhere near the workloads experienced today; hence, the sector unit was most often available to respond to emergencies that arose in "its" sector. Nowadays, if a police precinct has a call-for-service workload causing its units to be busy, say, 55% of the time, then at least 55% of all dispatches are intersector dispatches (hardly an insignificant amount). The correct argument is simple: Consider a randomly selected call for service. With probability 0.55 it will occur when the sector unit is busy on a previous call; thus, with probability 0.55, it will require an out-of-sector unit. But, this applies to all sectors and all calls, and thus the statement is true.

Example 4:   Statement: "The workloads of units will be balanced
(i.e., equalized) if the workloads of their respective
sectors are balanced."

This statement or its equivalent appears in nearly all
of the classic police administration texts. And, due
to intersector dispatches, it is wrong. In our recent
MIT work, we have derived useful sector configurations
in which the unit assigned to the least busy sector had
the greatest workload (among all units) and
(simultaneously) the unit assigned to the busiest sector
had the least workload. This type of behavior can be
modelled very well with hypercube-type models.

To place the required new work in the context of traditional
evaluative research, we refer to E.A. Suchman's book, Evaluative Research:*

        Many of the newer techniques and research designs, such
as...operations research, have not yet been adequately
incorporated into the planning and conduct of evaluation studies.
The valid interpretation and successful application of findings,
while the sine qua non of evaluation, is often grossly neglected
and misunderstood. These are only some of the important problems
and needs in the field of evaluation. Undoubtedly one of the
reasons that many of the current attempts at evaluation have
seemed weak and invalid is the lack of any clear-cut theory or
method to support the research.

We are postulating the need to develop a quantitatively based conceptual
framework (and details of the conceptualization necessary to implement it

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* Basic Books, New York, 1967 (reprinted through 1973), p. 7.

in practice) for evaluating experiments in the CJS. The required

quantitative framework would focus on three distinct phases of the

experiment: 1) design, 2) execution, and 3) evaluation. The methods

employed should be useful for any of the standard experimental designs:

the "one-shot" case study ("XO" in Campbell's* notation); the one-group,

pre-test, post-test design $(O_1 X O_2)$; the static group comparison $\begin{pmatrix} XO_1 \\ O_2 \end{pmatrix}$;

and the pre-test, post-test control group design $\begin{pmatrix} O_1 X O_2 \\ O_3 \ \ O_4 \end{pmatrix}$.

The design and evaluation phases would be constructed so as to use

quantitative models (wherever relevant) to predict causal relationships

among the variables. The need for this is overwhelming, as pointed out

by Suchman:**

> The primary reliance of the evaluation guides upon existing
> records discourages the utilization of research for the collection
> and analysis of data. This means that in most cases one deals with
> statistics obtained from samples of biased or unknown representa-
> tiveness, with available rather than pertinent data, with
> unreliable and invalid measures, and with relationships whose
> causal connections are not at all clear. [Emphasis added.]

Simple "back-of-the-envelope" reasoning, such as that illustrated with the

four examples above, would first be used in setting up the experimental

and control environments. In the context of the Kansas City patrol

experiment, such reasoning could be used to predict a priori the response

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* Campbell, D. T., and J.C. Stanley, "Experimental and Quasi-
Experimental Designs for Research and Teaching," in Gage, N.L., ed.
Handbook of Research on Teaching, Rand McNally and Co., Chicago, 1963,
pp. 171-246.

** P. 17.

times, patrol levels, and patrol workloads in each of the three experimental areas. Then, once a reasonable design is selected on the basis of crude models, more precise models (such as the hypercube model or the JUSSIM Model) would be used to fine-tune or calibrate the experimental design. So, in the design phase, quantitative models would be used to predict causal relationships between control variables (resources and deployment techniques) and empirical performance measures (response time, workloads, number of cross sector dispatches, patrol frequencies, etc.).

This method appears to offer considerable advantage over one that does not incorporate such causal relationships. Without them, the initial design is not likely to produce the experimental environment desired. Furthermore, one would have no way of predicting the likely amount of increase or decrease of a particular performance measure as a result of the experimental conditions.

In a directly parallel manner, the evaluation phase (the third phase) would use quantitative models to compare the observed values of performance measures to those predicted by the models. Discrepancies could quickly point the way to aspects of the experiment that did not operate in the way intended. Or they could indicate phenomena that were heretofore unknown and therefore not incorporated in the models. At the least, the models would provide a rigorous basis for considering the quantitative outcomes of the experiment. The qualitative outcomes would still have to be examined carefully, utilizing the standard techniques of evaluation research.

It is possible that some of the insights gained from the quantitative modeling component of the evaluation could shed light on results of the qualitative evaluation. As an example, models predict that dispatching the closest police vehicle (using an automatic vehicle location system) greatly increases the amount of cross-sector dispatching. This, in turn, could help explain the negative attitudes of police officers interviewed as part of the qualitative evaluation.

The quantitative framework to be developed for the second phase--the execution of the experiment--would recognize that uncertainties in the real world (due to unanticipated responses from agency personnel, or from citizens, or due to mechanical limitations of experimental hardware, or due to lack of consideration of one or more important environmental factors) usually cause one to change the "operating rules" of an experiment during its execution. In a patrol experiment, for instance, it would be very unwise for the planner to ignore cries from citizens' groups who claim that they are receiving inadequate police protection as a result of the experiment. Yet, the planner faces a dilemma--if he changes the operation of the experiment, he runs the risk of destroying any chance of successful evaluation.

Thus, in general, when one is planning the sequence of events in an experiment, the planning should take into account unexpected (or only partially expected) events which may arise during the course of the experiment and which, if ignored, could drastically reduce the chance of successfully evaluating the experiment. In the planning literature, this

dilemma focuses around the issue of master planning vs. contingency planning. As another example, in a Police experiment, a planner following a master plan would lay out the schedule and accomplishments of the experiment in a hard and fast way, not allowing for information learned during an early part of the experiment to influence the conduct of a later part. An experiment allowing for contingencies--such as adverse responses from neighborhood groups, suggestions from patrolmen, an increase in the workload due to publicity--would consider and incorporate these inputs throughout the program, thereby having a greater chance to complete the experiment successfully and to evaluate the outcome.

The need for such a flexible environment for the execution of an experiment has been noted by several authors.* McCaskey, while arguing for a contingency approach to planning, incorrectly identifies such an approach with "informal" or "intuitive" procedures, as contrasted to the "formal" procedures associated with a master planning approach. Weiss identifies the "tendency of the program to change while it is being

* Michael B. McCaskey, "A Contingency Approach to Planning: Planning with Goals and Planning without Goals." Academy of Management Journal, Vol. 17, No. 2, 1974, pp. 281-291.

Alfred P. Parsell, "Dynamic Evaluation: The Systems Approach to Action Research," SP-2423, Systems Development Corporation, Santa Monica, California, 1966.

Michael D. Maltz, "Evaluation of Crime Control Programs." U.S. Department of Justice, Law Enforcement Assistance Administration, National Institute of Law Enforcement and Criminal Justice, April, 1972.

Carol H. Weiss, Evaluation Research: Methods of Assessing Program Effectiveness. Prentice-Hall, New Jersey, 1972.

evaluated" (p. 93) as one of the big problems in evaluating the experiment. Following Parsell, Weiss recommends that the evaluator "...develop a dynamic rather than a static model of the program to categorize it in terms of its movement as well as its conceptual location." (p. 94) However, no formal procedures are offered for carrying out this process.

The required work in this area would develop a methodology to incorporate feedback from the experimental environment to affect the experimental design. It would use tools from operations research--particularly those associated with short-term and longer-term planning (such as dynamic programming, decision tree analysis, and Markov decision processes) to plan for such contingencies prior to implementation of the experiment and to assist in structuring an evaluation plan that anticipates adaptive changes in the experimental design.

Formally, the resulting experimental design would be a matrix of contingency plans, columns corresponding to discrete time periods and rows corresponding to the state of the feedback process. Each entry would be of the form, "What I (the experimental designer) would do if I were here (here determined by the particular feedback received)." Informally, one would hope to extract some general properties from the solutions to this type of problem to provide useful guidelines to evaluators who do not have the time or resources to apply the formal method.

Evaluation of Routine Operations

While the previous section has discussed the need for formal, quantitative tools for experimental evaluations, it is perhaps even more

important to monitor and evaluate routine, day-to-day operations. Here, too, quantitative models can play a useful role.

Unlike the area of experimental evaluation, we see no need for further methodological development prior to incorporating a significant number of quantitative models in day-to-day evaluation.* The major tools are available. The key impediment to their implementation up to this time is, we believe, their perceived inaccessibility due to mathematical notation, overly formalized and technical presentations, and the frequent need for computer assistance.

As illustrative uses of quantitative models in day-to-day evaluation, consider the following three situations: 1) evaluating the performance of telephone operators at a police 911 facility; 2) predicting the recidivism profile of a convicted offender as a function of sentence type (from the judge's point of view); 3) evaluating the utilization of the jury pool called up in a particular month.

In a 911 emergency call handling facility, the key type of quantitative model that is relevant is a queuing model. Such a model of the 911 system predicts, as a function of the number of operators assigned and their skills, the delays that can be anticipated by incoming callers and the average workloads (i.e., fractions of time busy) of the operators. A standard queuing model was applied to this problem in the New York City

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* This is not to say that all relevant methodologies have been developed. Rather, a number now exist that are implementable.

Police Department in 1968,* and has been used for many years since then as the primary basis for scheduling operators and evaluating their performance (and the performance of their supervisors). This same procedure could be utilized by any other police department if a nontechnical handbook on its implementation were widely available.

In the second example, a judge is repeatedly confronted with the problem of which sentence (or "correctional alternative") to select for a convicted offender. Here, for the classes of offenders which occur often in a statistical sense, it would be useful to provide a judge contemplating a sentencing decision an estimate of the expected recidivism profile of the offender for each alternative being considered. In this way the judge can eliminate inconsistencies in his sentencing practices, greatly reduce inequities, and (hopefully) develop a store of knowledge of the effects of various correctional alternatives so as to choose the most reasonable one for each type of offender. The quantitative modeling required here entails relatively simple categorization of offender classes and detailed statistical analysis of former sentencing decisions (along with the recidivism behavior of those sentenced). The resulting probabilistic model is a simple "expected value" model, one that could be implemented on computer systems containing criminal career profiles. Such a capability enhances a judge's ability to evaluate his own alternative sentencing policies.

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* R.C. Larson, "Improving the Effectiveness of New York City's 911," in Analysis of Public Systems, A. W. Drake, R. L. Keeney, P. M. Morse, eds. The MIT Press, 1972, pp. 151-180.

In the third and final example, consider the problem of calling up a jury pool for a particular month. Usually, from a larger sample of eligible citizens (selected for that year), a number N_i is selected to be in the pool for the ith month. The magnitude of N_i depends critically on the estimated court workload to be incurred during the ith month. Too often the number is made too large, so scores of citizens sit around the court house all day with very little to do, incurring significant social costs (in terms of lost time on the job, jury pay, and disillusionment with the judicial system). Occasionally the number is made too small, resulting in delayed trials and jury screenings. However, here too, rather simple mathematical models can be employed to estimate better the monthly demand for jurors, thereby balancing the costs of oversupply and undersupply of jurors. We have already demonstrated the feasibility of this approach in a court in the Boston area, but further documentation is required to make the technique generally available.

Recommendations

For evaluations of experimental programs and/or day-to-day operations that require quantitative performance measures and models, the following recommendations appear appropriate:

(1) LEAA should support research that would lead to improved methods for conducting and evaluating LEAA-sponsored experiments. This research would include methods for experimental program design, execution, monitoring, and

after-the-fact evaluation. The product of this work, in
addition to being useful in general social science appli-
cations, would focus particularly on the unique problems
one encounters in CJS and LEAA experiments. Hopefully,
in addition to research reports, the product would include
a handbook for CJS and LEAA personnel contemplating the
conduct of experimental programs.

(2) LEAA should select an already completed CJS experiment
(e.g., the Kansas City Preventive Patrol Experiment) and
test the developed methodology in an "after-the-fact"
manner. As a result of this process, the methodology
may be modified or changed in several ways. At that point
LEAA might consider employing the methodology in an on-going
test case to discover its usefulness in real-time applications.

(3) To facilitate evaluations of day-to-day operations, LEAA should
select a small number of common operational problem areas
(e.g., scheduling of 911 personnel, jury pool selections)
that are conducive to improvement through the use of
quantitative performance measures, methods, and models. For
each such area LEAA should support the writing of a handbook
to be used by the relevant agency personnel in implementing
the technique in their own agency. A limited number of such
implementations should be evaluated, and if successful
according to the evaluation criteria, then other common
operational problem areas should be tackled in the same way.

V. GENERAL RECOMMENDATIONS IN THE AREA OF EVALUATION

While the previous three sections have focused on a variety of specific evaluation areas of relevance to LEAA and CJS planners, researchers and managers, we offer here several additional suggestions that also bear on the evaluation issue. In the spirit of this working draft, we solicit feedback on these suggestions.

Dissemination

Despite recent and current attempts at disseminating the results of "successful" projects and at pressuring agencies to include evaluation design in their overall program design, there is still much to be done in communicating the results of LEAA-funded programs to the potential user community. Evaluation now is often thought of as a 3% to 6% "add-on" or "surtax"--a price to be paid in order to obtain an LEAA grant. And many evaluation designs are shoddy and eventually never carried out. Why not require dissemination of all evaluations of LEAA-funded projects through some yet-to-be-created national medium? This could be an LEAA newsletter or, preferably, a popularized research journal with its own board of editors. Requiring such dissemination would make each LEAA project very visible to the user community--with regard to design, execution, outcome, and evaluation. Such a step may bring about an accountability for the outcome of LEAA projects which is now largely nonexistent.

Evaluation Workshops

Most people--within the CJS or LEAA or any other governmental agency--have not been exposed to a formal presentation of evaluation methodologies. No wonder, then, that many "forced" evaluations are poor in design and execution. Perhaps the LEAA should consider running a series of evaluation workshops around the country--probably at least one in each of the LEAA regions. Each workshop could last anywhere from one or two days to two weeks, depending on the audience and depth of material to be covered.

It might also be appropriate to encourage universities receiving LEEP funds in a criminal justice training program to offer courses in various facets of criminal justice evaluation. Perhaps even the IACP could be encouraged to present concepts of evaluation in several of their workshops that are presented yearly around the United States.

Interfacing Evaluation Data with New Technologies

The LEAA has been funding for some time now various types of new information processing technologies to improve. the operational effectiveness of parts of the CJS. These include computer-assisted dispatch (CAD) systems, automatic vehicle monitoring (AVM) systems, computerized criminal history files, in-the-field inquiring systems (for stolen automobiles, wanted persons, etc.), computer-assisted court scheduling systems, etc. Yet it is only the exceptional implementation of one of

these technologies that processes the data in the system that is relevant to ongoing management and evaluation of activities. For instance, a CAD system includes within its computerized files the most up-to-date information possible relating to management, allocation, and evaluation of patrol forces in the field. Yet few (if any) CAD systems to date utilize this information by reducing it to understandable form and then feeding it back in a timely manner to relevant agency decision makers for routine day-to-day management and evaluation.

Perhaps NILEC's Office of Evaluation should take steps to encourage CJS technology designers and consumers to utilize management- and evaluation-oriented data which are now usually viewed as a (neglected) by-product of the technology. These steps could take the form of grant requirements, of educating both the designers and consumers, and of funding exemplary projects that propose to utilize the evaluation-oriented data.

A SPA EVALUATION KIT

While we are generally opposed to adding to the already-too-numerous bureaucratic requirements associated with LEAA grants (or grants of many other federal agencies, for that matter), it might be reasonable to suppose that evaluation will not be carried out on the majority of SPA-funded projects unless an easily implemented mechanism is set up. One such mechanism could be a format for describing the evaluation plan

for each proposed project. The format, which might vary by type of program (say, police, courts, corrections), could take the form of two or three additional "boiler-plate" pages to fill out in the formal grant application papers. While we are convinced that this step in itself will not bring about usable evaluations of LEAA programs, perhaps without such a formal requirement "evaluation" will be taken as this year's fad work (hopefully to be replaced by something else next year).

The formats of these pages could be motivated and presented in a NILEC-produced "SPA Evaluation Kit," which would discuss many of the general issues of evaluation as well as illustrate detailed versions of the forms.

APPENDIX I

Questionnaire for the Survey on

"Expenditure and Employment Data for
the Criminal Justice System; 1971-72"

APPENDIX 3: SURVEY FORMS

Data supplied by	FORM CJ-6 (10-2-72)	U.S. DEPARTMENT OF COMMERCE SOCIAL AND ECONOMIC STATISTICS ADMINISTRATION BUREAU OF THE CENSUS
Name		**SURVEY OF EXPENDITURES AND EMPLOYMENT FOR CIVIL AND CRIMINAL JUSTICE ACTIVITIES OF LOCAL GOVERNMENTS**
Title		In correspondence pertaining to this report, please refer to the Census File number above your address
Official address *(Number and street, city, State, ZIP code)*		

Telephone			(Please correct any error in name and address including ZIP code)
Area code	Number	Extension	TO: Bureau of the Census Governments Division Washington, D.C. 20233

Dear Sir:

The Bureau of the Census has been requested by the Law Enforcement Assistance Administration, U.S. Department of Justice, to identify expenditure and employment data for five important criminal justice activities; police protection, judicial, legal services and prosecution, indigent defense and corrections.

These data will be utilized by the Law Enforcement Assistance Administration in implementing and administering the planning and action grant programs of the Omnibus Crime Control and Safe Streets Act of 1968 as amended by the Omnibus Crime Control Act of 1970.

Please complete and return the questionnaire in the preaddressed envelope. Your cooperation and assistance in this project will be greatly appreciated. If you have any problems in filling out this questionnaire, you may call for assistance on area code 301 – 763-7826.

Sincerely,

GEORGE H. BROWN
Director
Bureau of the Census

Enclosures

USCOMM-DC

ACTIVITY A person working in more than one of the following activities should be counted only once, in the one which he works the largest part of his time.	Part I — EMPLOYMENT AND PAYROLL Enter the appropriate employment and payroll data for the pay period including October 15, 1972. Do NOT report annual payroll data				Part II — FINANCES Enter the annual expenditure data for the activities listed below for your fiscal year ending between July 1, 1971 and June 30, 1972. Please specify your fiscal year ending date here ⌐				
	FULL-TIME EMPLOYEES		PART-TIME EMPLOYEES		CURRENT OPERATION	CAPITAL OUTLAY	INTERGOVERNMENTAL EXPENDITURE		GOVERNMENT CONTRIBUTIONS FOR EMPLOYEE BENEFITS
	Number of employees (a)	Payroll amount (pay period including October 15, 1972) (Omit cents) (b)	Number of employees (c)	Payroll amount (pay period including October 15, 1972 (Omit cents) (d)	Exclude employer contributions to employee benefits and report in column (e) (a)	Construction, equipment and land (b)	Payments to other local governments (c)	Payments to the State government (d)	Exclude employee contributions (e)
1. POLICE PROTECTION — In addition to all regular police, include special police force units (park, housing, etc.) having the power to arrest. Exclude jails holding adults or juveniles more than 48 hours and report under "Corrections."									
2. JUDICIAL — All courts and activities associated with courts; exclude probation and parole and report under "Corrections."									
3. LEGAL SERVICES AND PROSECUTION — Legal advice to the chief executive, prosecution of law violators and representation of the government in lawsuits.									
4. INDIGENT DEFENSE — Services providing legal counsel to accused persons.									
5. CORRECTIONS — Jails, prisons, reformatories, detention homes and the like holding adults or juveniles more than 48 hours. Also narcotics rehabilitation programs and probation and parole.									
6. OTHER CRIMINAL JUSTICE — Other criminal justice activities not reported above. Please list these activities separately on page 3.									

A. Mark the pay period interval which applies to the payrolls reported above.

1. Full-time employees ("X" one box only)

  1 ☐ Monthly
  2 ☐ Twice a month (24 pay periods per year)
  3 ☐ Every two weeks (26 pay periods per year)
  4 ☐ Weekly
  5 ☐ Other — Specify _____

| CENSUS USE |

2. Part-time employees ("X" one box only)

  1 ☐ Monthly
  2 ☐ Twice a month (24 pay periods per year)
  3 ☐ Every two weeks (26 pay periods per year)
  4 ☐ Weekly
  5 ☐ Other — Specify _____

| CENSUS USE |

B. Revenue direct from the Federal Government — Enter all revenue your government received for criminal justice activities direct from the Federal Government (not passed through any State agency) in your fiscal year ending between July 1, 1971 and June 30, 1972. _____ | $

FORM CJ-C (10-2-72)

ACTIVITIES

1. **POLICE PROTECTION** — Enforcing the law, preserving the public peace, maintaining traffic safety, and investigation and apprehension of accused violators of the law, by a police agency, sheriff or similar agency. Also special police units employed by your government such as park, airport, housing and like police force units having the power to arrest. Also include coroner and medical examiner offices.

   Exclude — Sheriff offices which engage primarily in the work of a court (report under "Judicial"), and operation of jails or lock-ups which hold adults or juveniles for more than 48 hours (report under "Corrections").

2. **JUDICIAL** — All civil and criminal courts and court-associated activities (e.g., law libraries, jury selection).

   Exclude — The prosecuting attorney's office or the equivalent (report under "Legal Services and Prosecution"), indigent defense (report under "Indigent Defense") and probation and parole activities (report under "Corrections").

3. **LEGAL SERVICES AND PROSECUTION** — Prosecuting attorney's office, legal advice to the chief executive of the government, representation of the government in lawsuits and prosecution of accused violators of the law.

4. **INDIGENT DEFENSE** — Activities associated with the right of accused persons to have legal counsel and representation, office of the public defender, and other governmental programs which pay the fees of court-appointed counsel.

5. **CORRECTIONS** — Confinement and rehabilitation of adults and juveniles suspected or convicted of offenses against the law. This includes the operation of institutions and the management of non-institutional programs. Include jails and the like holding adults or juveniles more than 48 hours "Half-way Houses," probation and parole, and narcotic and alcoholic rehabilitation programs operated and administered by a correctional authority.

   Exclude — Lock-ups or tanks holding adults or juveniles less than 48 hours, institutions solely for dependent and neglected children or the like, and narcotic addiction programs not related to institutions.

6. **OTHER CRIMINAL JUSTICE** — Expenditures for programs which are not separable into the above categories or cannot be included in these categories, such as criminal justice planning agencies, crime councils and commissions on alcoholism and drugs. If expenditures are reported here, they must be itemized on Page 3 of this questionnaire.

Part I — EMPLOYMENT AND PAYROLL

1. **EMPLOYEES** — All persons paid by your government for personal services performed, including all officials, salary workers and other persons in paid leave status.

   Exclude — Unpaid officials, persons on unpaid leave, pensioners, contractors and their employees and persons paid entirely by another government for services performed for your government.

   a. **FULL-TIME EMPLOYEES** — Persons employed during the pay period including October 15, 1972, on a full-time basis. Include all full-time temporary or seasonal workers employed during this pay period.

   b. **PART-TIME EMPLOYEES** — Persons employed during the pay period including October 15, 1972, on a part-time basis. Include here all persons working for your government who are paid by more than one government (e.g., with supplemental check).

Part I — EMPLOYMENT AND PAYROLL — Continued

2. **PAYROLL** — Gross payroll before deductions including salaries, wages, fees, or commissions earned during the pay period including October 15, 1972, by employees as defined in (1a) and (1b) above. If some employees are paid on some basis different from the predominant pay period, please include amounts for them on an adjusted basis.

   Report the pay period interval for which all or most of the full-time (or part-time) employees are paid.

Part II — FINANCES

1. **CURRENT OPERATIONS** — Salaries and payroll of your government's officers and employees and the purchase of supplies, materials, and contractual services from individuals and firms in the private sector.

   Exclude — all capital outlay (see 2 below), debt retirement, securities investment, loan extensions, within-government transactions, and employer contributions to employee benefits (report in column "c").

2. **CAPITAL OUTLAY** — Direct expenditure for contract or force account construction of buildings and other improvements, and for the purchase of equipment, land, and existing structures.

3. **INTERGOVERNMENTAL EXPENDITURE** — All money paid to other governments as fiscal aid, or payment for services rendered, or for contracts or compacts with another government.

   a. **PAYMENTS TO OTHER LOCAL GOVERNMENTS** — Payments of your government to another county, city, town, special or school district.

   b. **PAYMENTS TO THE STATE GOVERNMENT** — Payments of your government to the State government or any of its departments, agencies or instrumentalities.

   Exclude money paid to another government for the purchase of commodities, property, utility services, any taxes imposed and paid as such, and contributions for social insurance.

4. **GOVERNMENT CONTRIBUTIONS FOR EMPLOYEE BENEFITS** — Any employer contributions, separable by activity, to the Federal Social Security System, State and local retirement systems, commercial or mutual insurance plans, workmen's compensation funds, and insurance premiums paid by your government for health, hospital, disability, and life insurance programs.

   Exclude payments made directly to individuals and contributions made by employees to any of the above programs.

5. **REVENUES DIRECT FROM THE FEDERAL GOVERNMENT** — Enter only the revenue received directly from the Federal Government. Do not enter amounts passed from the Federal Government through the State or its instrumentalities to your government.

OTHER CRIMINAL JUSTICE
List activities included on Page 2, Parts I and II, Line 6.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Comments _____
_____
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Form Approved: O.M.B. No. 41-R2629

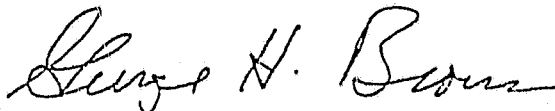| Data supplied by	FORM CJ-23 (9-27-72)	U.S. DEPARTMENT OF COMMERCE SOCIAL AND ECONOMIC STATISTICS ADMIN. BUREAU OF THE CENSUS
Name	SURVEY OF EXPENDITURE AND EMPLOYMENT FOR SELECTED SPECIAL POLICE FORCES	
Title	In correspondence pertaining to this report, please refer to the Census File number above your address	
Official address (Number and street, city, State, ZIP code)		
Telephone	(Please correct any error in name and address including ZIP code)	
Area code	Number	Extension

Dear Sir:

The Bureau of the Census has been requested by the Law Enforcement Assistance Administration, U.S. Department of Justice, to identify expenditure and employment data for Special Police Forces.

These data will be utilized by the Law Enforcement Assistance Administration in implementing and administering the planning and action grant programs of the Omnibus Crime Control and Safe Streets Act of 1968 as amended by the Omnibus Crime Control Act of 1970.

Please complete and return the questionnaire in the preaddressed envelope. Your cooperation and assistance in this project will be greatly appreciated. If you have any problems in filling out this questionnaire, you may call for assistance on area code 301-763-7826.

Sincerely,

GEORGE H. BROWN
Director
Bureau of the Census

Enclosures

USCOMM-DC

Fill out both Parts I and II unless you CONTRACT for special police services and have NO employees of your own.
If you CONTRACT, for these services, fill out only "Part II — FINANCES."

Part I — EMPLOYMENT AND PAYROLL

		FULL-TIME (a)	PART-TIME (b)
A. Enter here the number of full-time and part-time sworn police officers (i.e. having the power to arrest) in your special police force unit. ⟶			

B. For your special police force unit, enter the appropriate employment and payroll data for the pay period including October 15, 1972. Include sworn police officers, security patrols, guards, clerical and communications personnel and other support personnel who are employees of the special police force.	FULL-TIME EMPLOYEES		PART-TIME EMPLOYEES	
	Number of employees (a)	Payroll amount (pay period including October 15, 1972) (Omit cents) (b)	Number of employees (a)	Payroll amount (pay period including October 15, 1972) (Omit cents) (b)
Do NOT report annual payroll data.		S		S

C. Mark the pay period interval which applies to the payrolls reported above.

1. FULL-TIME ("X" one box only)

1 ☐ Monthly
2 ☐ Twice a month (24 pay periods per year)
3 ☐ Every two weeks (26 pay periods per year)
4 ☐ Weekly
5 ☐ Other — Specify _____

CENSUS USE

2. PART-TIME ("X" one box only)

1 ☐ Monthly
2 ☐ Twice a month (24 pay periods per year)
3 ☐ Every two weeks (26 pay periods per year)
4 ☐ Weekly
5 ☐ Other — Specify _____

CENSUS USE

Part II — FINANCES

A. Enter the annual expenditure data for your special police force unit for the fiscal year ending between July 1, 1971, and June 30, 1972.

Please specify your fiscal year ending date here.

CURRENT OPERATION	CAPITAL OUTLAY	INTERGOVERNMENTAL EXPENDITURE		GOVERNMENT CONTRIBUTIONS FOR EMPLOYEE BENEFITS
Exclude employer contributions to employee benefits and report in column (e) (a)	Construction, equipment and land (b)	Payments to other local governments (c)	Payments to the State government (d)	Exclude employee contributions (e)

B. Revenues direct from the Federal Government — Enter all revenue your unit received for police activities direct from the Federal Government (not passed through any State agency) in the fiscal year ending between July 1, 1971, and June 30, 1972. ⟶ | S

FORM CJ-20 (9-27-72)

DEFINITIONS

ACTIVITY

SPECIAL POLICE FORCE – A group of law enforcement agents other than the regular police which services a special area or jurisdiction, e.g., campus police, park police, transit police, harbor police, airport police. Though a special police force usually cooperates fully with the regular local police force, it is administratively independent.

Part I – EMPLOYMENT AND PAYROLL

1. EMPLOYEES – All persons in your special police force unit (officers and employees) paid for personal services performed, including all officials, salary workers and other persons in paid leave status in your unit.

   Exclude unpaid officials, persons on unpaid leave, pensioners, contractors and their employees and persons paid entirely by another government for services performed for your government.

   a. FULL-TIME EMPLOYEES – Persons employed during the pay period including October 15, 1972, on a full-time basis. Include all full-time temporary or seasonal workers employed during this pay period.

   b. PART-TIME EMPLOYEES – Persons employed during the pay period including October 15, 1972, on a part-time basis.

2. PAYROLL – Gross payroll before deductions including salaries, wages, fees, or commissions earned during the pay period including October 15, 1972, by employees as defined in (1a) and (1b) above. If some employees are paid on some basis different from the predominant pay period, please include amounts for them on an adjusted basis.

   a. Report the pay period interval for which all or most of the full-time (or part-time) employees are paid.

Part II – FINANCES

1. CURRENT OPERATIONS – Salaries and payroll of your unit's officers and employees and the purchase of supplies, materials, and contractual services from individuals and firms in the private sector.

   Exclude all capital outlay (see 2 below), debt retirement, securities investment, loan extension, within government transactions and employer contributions to employee benefits.

2. CAPITAL OUTLAY – Direct expenditure for contract or force account construction of buildings and other improvements, and for the purchase of equipment, land, and existing structures.

3. INTERGOVERNMENTAL EXPENDITURE – All money paid to other governments as fiscal aid, or payment for services rendered, or for contracts or compacts with another government.

   a. PAYMENTS TO OTHER LOCAL GOVERNMENTS – Payments to another county, city, town, special or school district or any of their agencies or instrumentalities.

   b. PAYMENTS TO THE STATE GOVERNMENT – Payments to the State government or any of its departments, agencies or instrumentalities.

   Exclude money paid to another government for the purchase of commodities, property, utility services, any taxes imposed and paid as such, and contributions for social insurance.

4. GOVERNMENT CONTRIBUTIONS FOR EMPLOYEE BENEFITS – Any employer contributions, separable for your unit, to the Federal Social Security System, State and local retirement systems, commercial or mutual insurance plans, workmen's compensation funds, and insurance premiums paid by your government for health.

   Exclude payments made directly to individuals and contributions made by employees to any of the above programs.

5. REVENUES DIRECT FROM THE FEDERAL GOVERNMENT – Enter only the revenue received directly from the Federal Government. Do not enter amounts passed from the Federal Government through the State or its instrumentalities to your unit.

APPENDIX 3—Continued

Data supplied by	FORM CJ-25 (1-18-73)	U.S. DEPARTMENT OF COMMERCE SOCIAL AND ECONOMIC STATISTICS ADMIN. BUREAU OF THE CENSUS
Name		SURVEY OF EXPENDITURE AND EMPLOYMENT FOR CIVIL AND CRIMINAL JUSTICE ACTIVITIES OF THE FEDERAL GOVERNMENT
Title		
Official address (Number and street, city, State, ZIP code)		

Telephone			(Please correct any error in name and address including ZIP code)
Area code	Number	Extension	TO: Bureau of the Census Governments Division Washington, D.C. 20233

Dear Sir:

The Bureau of the Census has been requested by the Law Enforcement Assistance Administration, U.S. Department of Justice, to collect expenditure and employment data for five important criminal justice activities: police protection, judicial, legal services and presecution, indigent defense and correction.

These data will be used to implement and administer the provisions of the Omnibus Crime Control and Safe Streets Act of 1958 as amended by the Omnibus Crime Control Act of 1970. Information contained in the final report will include data on civil and criminal justice activities of the Federal government for intergovernmental comparisons and to meet the needs of criminal justice planners at all levels of government.

It is requested, therefore, that you complete and return this questionnaire in the enclosed envelope. The information you enter should be only for the bureau, agency, or office capitalized in the address block above. Your cooperation and assistance in this project will be greatly appreciated. Should you have any questions or problems in completing the questionnaire, please call Mr. Edward C. Malloy, Jr. on 763-7825.

Sincerely,

JOSEPH R. WRIGHT, JR.
Acting Director
Bureau of the Census

Enclosure

APPENDIX II

Questionnaire for the Kansas City Police Department's

"Survey of Municipal Police Departments"

GENERAL ADMINISTRATIVE SURVEY OF POLICE DEPARTMENTS
(Cities 300,000 to 1,000,000 Population)

* * * * * * * *

KANSAS·CITY, MISSOURI POLICE DEPARTMENT

Staff Planning Division

City_____

ADMINISTRATIVE DATA:

1. Population, 1972 estimate: _____

2. Total square mile area: _____

    a. Land: _____

    b. Water: _____

3. Total annual police budget
    present fiscal year: _____

4. Annual police salary budget
    present fiscal year: _____

5. Number of employees:	Authorized	Present Number Employed
a. Police officers	_____	_____
b. Civilian employees (Full-time, clerical, tech., etc. - exclude school guards: temporary summer employees, etc.):	_____	_____
c. Total number employees (5a + 5b):	_____	_____

NUMBER OF POLICE OFFICERS AND MONTHLY SALARY BY RANK

Other than Detective Ranks	Number Per Rank	Base Monthly Salary		
		Minimum	Maximum	W/Longevity
6. Chief of Police:	_____	_____	_____	_____
7. Lieutenant Colonel:	_____	_____	_____	_____
8. Major:	_____	_____	_____	_____

9. Captain of Police: _____ _____ _____ _____

10. Lieutenant of Police: _____ _____ _____ _____

11. Sergeant of Police: _____ _____ _____ _____

12. Corporal: _____ _____ _____ _____

13. Patrolman (15 yrs. and above): _____ _____ _____ _____

14. Patrolman (10 to 15 yrs.): _____ _____ _____ _____

15. Patrolman (5 to 10 yrs.): _____ _____ _____ _____

16. Patrolman (2 to 5 yrs.): _____ _____ _____ _____

17. Patrolman (1st yr.): _____ _____ _____ _____

Detective Ranks

18. Commanding Officer, Detectives: _____ _____ _____ _____

19. Captain of Detectives: _____ _____ _____ _____

20. Lieutenant of Detectives: _____ _____ _____ _____

21. Sergeant of Detectives: _____ _____ _____ _____

22. Detectives: (Complete only
    if a rank; do not complete
    if only an assignment.) _____ _____ _____ _____

    *Other Law Enforcement: _____

    Total Officers: _____ (Should match Item 5a)

Comments: (Please include longevity formula): _____

_____

_____

_____

_____

_____

*Include law enforcement (sworn) personnel who cannot be otherwise included within the stated ranks.

WORKING CONDITIONS

23. Hours per work week: _____

24. How compensated for:

    a. Court time: _____

    b. Overtime: _____

25. Annual vacation leave: _____ Working days

26. Number paid holidays per year: _____ Days

27. Number days annual paid sick leave: _____ Days

28. Accumulation limit of annual sick leave:

_____ Non-accumulative

_____ Number of days

_____ No limit

PROMOTIONAL POLICY (PROCESS)

	Detective	Sergeant	Lieutenant	Captain
29. Written Examination:				
Oral Interview:				
Group Interview:				
Psychological Evaluation:				
Performance Evaluation:				

30. If a written examination is used for any of the above ranks, who supplies the examination material _____

_____

31. Amount of time required prior to eligibility for the next higher rank:

   a. Detective _____ yrs. as a Patrolman

   b. Sergeant _____ yrs. as a Patrolman-Detective

   c. Lieutenant _____ yrs. as a Sergeant

   d. Captain _____ yrs. as a Lieutenant

RETIREMENT SYSTEM

Contributions

32. Monthly contribution by officer: _____ Per Cent of salary

33. Monthly contribution by city: _____ Per Cent of salary

Minimum Retirement

34. Amount or formula of minimum pension: _____

   a. Years service necessary: _____

   b. Age necessary: _____

Maximum Retirement

35. Amount or formula of maximum
    pension: _____

    a. Years service necessary: _____

    b. Compulsory retirement age: _____

Disability Pension

36. Illness or injury, non-service
    connected (formula): _____

37. Illness or injury, service
    connected (formula): _____

Death Benefits

38. Widow's pension: _____

39. Surviving children's pension: _____

40. Other dependents (explain): _____

41. Natural death (other than pension): _____

42. Line of duty death (other
    than pension): _____

Comments: _____

_____

_____

_____

OPERATIONAL DATA

43. Number of police stations
    (including Headquarters): _____

44. Number of regular patrol beats per
    shift:

	Day	Evening	Night	
	_____	_____	_____	Motorized
	_____	_____	_____	Foot

45. Number of patrol wagons on each
    shift or platoon:

Day	Evening	Night	Other
_____	_____	_____	_____

46. Number of Patrol Bureau Field
Supervisors on each shift or
platoon:

	Day	Evening	Night	Other
Sergeant:	____	____	____	____
Lieutenant:	____	____	____	____
Captain:	____	____	____	____
Other (explain):	____	____	____	____

47. Are assignments to patrol shifts
or platoons: ____ ____ ____ ____

a. Fixed:	____	____	____	____
b. Rotating:				
Weekly	____	____	____	____
Monthly	____	____	____	____
Quarterly	____	____	____	____
Other (explain)	____	____	____	____

48. If a fixed shift is utilized, what criteria is used in selecting personnel for each shift?

Officers choice _____ Department Assignment _____

Officers seniority _____ Other (explain) _____

Number of Investigators

(Include supervisors where they are specifically assigned to investigation but do not include if they administer, coordinate, etc., as the Chief of Detectives.)

49. Crime Investigators: (Homicide,
Burglary, Robbery, Narcotics, etc.) _____

a. Assigned to precincts: _____

b. Assigned to headquarters: _____

Rank of Crime Investigators:
(Detectives, Corporals, Inspectors,
etc., exclude supervisory ranks) _____

50. Vice Investigators:
    (Gambling, Prostitution, etc.)   _____

    a. Assigned to precincts: _____

    b. Assigned to headquarters: _____

    Rank: (Exclude supervisory ranks)   _____

51. Intelligence Investigators:
    (Full time on assembly of data on
    organized crime and subversive
    activities.)   _____

    Rank: (Exclude supervisory ranks)   _____

52. Hit and Run Investigators:
    (Follow up for automobile hit-skip
    accidents)   _____

    Rank: (Exclude supervisory ranks)   _____

<u>Mobile Evidence Technicians</u>

53. Laboratory Technicians for crime scene processing - Number per shift:

    Day Shift: _____

    Evening Shift: _____

    Night Shift: _____

<u>Number of Radio Patrol Cars</u>
(Exclude supervisory personnel)

	One-Man Cars	Two-Man Cars
54. Day Shift:	_____	_____
55. Evening Shift:	_____	_____
56. Night Shift:	_____	_____
57. Other Shift:	_____	_____

<u>Number of Accident Investigation Cars</u>
(Exclude supervisory personnel)

	One-Man Cars	Two-Man Cars
58. Day Shift:	_____	_____
59. Evening Shift:	_____	_____
60. Night Shift:	_____	_____

Traffic Vehicles	No. of Vehicles	Personnel Ass'd
61. Solo motorcycles:	_____	_____
62. Three-wheel motorcycles:	_____	_____
63. Radar Units:	_____	_____
64. Motor scooters:	_____	_____

Fleet Size

65. All vehicles: _____

    a. Number of full-size automobiles: _____

    b. Number of compacts _____

    c. Number wagons and other trucks: _____

Maintenance - Motor fleet

66. Maintenance of the police motor fleet is performed by:

    Police Garage _____   City Garage _____

    Private Contractor_____   Other (explain)_____

67. If Police Garage is the answer to the above question, is the cost of operation of the function charged against the department's annual budget?

    Yes _____   No _____

Helicopters

68. Does your department utilize helicopters in police work?

    Yes _____   Number of ships _____   Make & model of ships

    No _____   _____

69. If no, does your department anticipate purchasing helicopters in the near future?

    Yes _____   Approximate date_____

    No _____

70. How are your helicopters deployed?

    Routine police patrol (selective enforcement) _____

    Fixed geographical boundaries   _____

FRINGE BENEFITS

Health Care Furnished for Police Employees and Dependents
(Exclusive of Sick Leave)

	Hospitalization	Medical	Surgical
71. Injury/Illness, Line of Duty:	_____ %	_____ %	_____ %
72. Injury/Illness, Off Duty:	_____ %	_____ %	_____ %

73. Group Health Insurance covering
police employees and dependents: _____ (Yes, No, or optional)

	Hospitalization	Medical	Surgical
a. Premium paid by city:	_____ %	_____ %	_____ %
b. Premium paid by officer:	_____ %	_____ %	_____ %

Personal Equipment

74. Uniforms and leather:

_____ Department furnishes

_____ Officer furnishes

_____ Officer furnishes and
Department pays an allowance
of $_____ (Yr.)   (Mo.)

75. Sidearm:

_____ Department furnishes

_____ Officer furnishes

a. Basic type of sidearm: _____ Revolver _____ Semi-Automatic

b. Caliber of sidearm: _____

Liability Insurance

76. Police vehicles covered by liability insurance: (Yes or No) _____

If yes, purchase of liability insurance is by: _____ City _____ Officer

COMPUTER PROGRAM

77. Does your department have a computer program at the present time?

Yes_____ Type and Model_____ No_____

a. If not, do you anticipate such a program in the near future?

Yes _____ Approximate Date _____ No _____

78. What is the basic geographical reporting area for the data in your program?

City Block _____ Census Tract _____ Census Tract and Census Block_____

Patrol Beat_____ Your own permanent grid system _____

Other (explain)_____

79. Does your computer system have police want/warrant files in real time status?

Yes _____   No _____

If yes, is your computer system interfaced (tied into) with other law enforcement agencies?

Yes _____   No _____

80. Is your computer totally under police control or is it shared with non-police agencies?

_____

81. What areas are encompassed in your computer program?

a. Stolen autos: _____   h. Payroll accounting: _____

b. Stolen property: _____   i. Radio calls: _____

c. License plate registration: _____ j. Traffic accidents: _____

d. Warrants and wanted persons: _____ k. Traffic arrests: _____

e. Manpower deployment: _____   l. Other arrests: _____

f. Modus Operandi _____   m. Other (explain): _____

g. Criminal index and records: _____

82. Number of personnel assigned to your data processing function?

a. Keypunch Operators: _____

b. Programmers: _____

c. Computer Operators: _____

d. Other (explain): _____

Comments:_____
_____
_____
_____
_____
_____

MISCELLANEOUS INFORMATION

83. Is the cost of janitorial and custodial services for all police facilities included in the police budget?

    Yes _____   No _____

84. Does your city have a Police Review Board, or similar body, composed in whole or part of non-police personnel, which review, makes recommendations or holds hearings on citizen charges of abuse or brutality by police officers, or discrimination?

    Yes _____   No _____

85. Do you require supervisory and command officers to have more formal education than is required for first year patrolman?

    Yes _____   No _____

    If yes, show number of years of college required for:

    1st year Patrolman: _____

    Supervisory ranks: _____

    Command ranks: _____

86. Do you provide incentive pay for personnel based on either years of college completed or college credit hours accrued?

    Yes _____   No _____

    If yes, show formula used. _____

    _____

    _____

    _____

    This questionnaire completed by:

    Signature _____

    Rank or Title _____

END