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PRODUCTIVITY AND RESOURCE ALLOCATION IN PROSECUTION AND PUBLIC DEFENDER AGENCIES^{1/}

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INTRODUCTION

In 1978, a survey of state and local governments conducted by the General Accounting Office^{2/} showed an increased emphasis by cities on productivity improvement programs. Officials in forty-five percent of the cities claimed that they had established "performance measurement systems" and were gathering data to measure both efficiency and effectiveness. However, the GAO analysts criticized the significance of this high percent arguing that there was not assurance that these performance measurement systems were being used in important decisionmaking processes, including budgeting.

Prior to the survey, in 1971, the Urban Institute, in conjunction with the International City Management Association (ICMA), examined the budget documents of 354 cities and counties to determine the level of analytical capabilities that these local jurisdictions employed^{3/}. They found that, on the average, more than half of the cities in the survey indicated that workload, efficiency and effectiveness measures were used, to at least some extent, in reviewing operating budgets^{4/}. However, because the results were based on responses to a sample that could have selection bias and were dependent on the respondent's interpretation of ambiguous terms, the findings of this study were also weakened and couched in uncertainty.

To overcome these deficiencies and to clarify some of the questions generated by these prior studies, Usher and Cornia^{5/} surveyed the chief executives of all cities with populations over 100,000 (and some smaller cities to assure state and geographical representation). Budget materials from more than two thirds of the 163 designated cities were reviewed and information about the budgetary process encoded. An attempt was made to identify the extent to which four commonly used indicators were included in the budget process. These included measures of effort,

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efficiency, effectiveness and equity.

Effort was defined as the volume of work done by an agency.^{6/} Efficiency measured the unit costs of production or the degree to which personnel and other resources were utilized to their potential.^{7/} Effectiveness measured the degree of achievement of the goals and objectives of the program or the service delivered;^{8/} or if such statements did not exist, program results or impact.^{9/} Equity was based on either the notion of equal opportunity^{10/} or the assertion that services should be provided to all persons or groups on an equal basis, regardless of their ability to pay for them or to express a demand for them. In this latter case, equity conforms more closely to the concept of distributive justice.^{11/}

The results of the Usher/Cornia study indicated that the majority of cities in the study "required the establishment of goals or objectives as part of the budgeting process; however, in no more than about half of those cases are the goals useful standards of performance."^{12/} Most of the cities required measures of effort as indicators of output; nearly half required measures of effectiveness; about one third attempted to measure the efficiency of their operations; and fewer than ten percent used some measures of program equity.

Few persons argue with the need for measuring the performance of public service delivery systems; but as the studies mentioned above indicate, the actual implementation of performance measurement systems is spotty, incomplete and often not systematically integrated into the budgetary and planning decisionmaking processes. As Usher and Cornia conclude, one must question whether these failures or inadequacies are due to the economic status of the city, agency resistance,

the lack of actual improvement in performance when systems are implemented, or the fact that "the availability of performance data does not guarantee that those data will be used."^{13/}

It is our thesis that the reason why these conditions exist is not due to the unwillingness of agency heads in the public sector to collect and use this information but rather, it is due to some fundamental barriers which impede this task. These include: (1) little sensitivity on the part of agency personnel to the concept of productivity as a performance measurement indicator; (2) cumbersome techniques for estimating manhours and output based on inadequate statistical reporting systems; (3) lack of knowledge about the factors that affect the dynamics of an agency's operations and, as a result, little systematic collection or measurement of them; (4) few examples of how to use performance data for operational, administrative, or planning purposes.

As a result, although there is almost universal consensus that the productivity of an agency is a primary area for inclusion in performance measurement systems, the practical reality is that the tools, techniques and knowledge about what, and how, to measure are lacking. This is especially so in most prosecutors' and public defenders' offices. Lawyers, traditionally, are not exposed to the world of labor economics, productivity studies or even management and planning. The everyday work of criminal case adjudication focuses on the processing and preparation of individual cases and does not lend itself easily to the notion of agency productivity. Additionally, even when offices have employed non-attorney staff to provide administrative and support services to the management, budgeting and planning functions, performance measurement is rarely established as a priority or even on-going activity; and, for a simple reason. In the past there has been little need for it. Only the recent shortages caused by recessions, double

digit inflation and federal funding reductions have given rise to an emphasis on "cutback management" and to improving productivity as a means of reducing costs.

As increasing productivity assumes greater importance to an agency, the problems associated with measuring what appears to be a simple ratio of output to input come into focus. This paper addresses some of the issues involved in defining and measuring the input side of the productivity model and in evaluating the efficiency of prosecution and public defender agencies.

LABOR AS AN INPUT IN PRODUCTIVITY MODELS

One of the first considerations that should be given to the input component of a productivity model is to define it in terms of those factors that explain changes in output. Although these factors include both tangible and intangible inputs, not all of them may be particularly relevant when one applies the model to the public sector and more specifically to prosecution and public defense. Tangible input includes the categories of labor, physical capital including land, and intermediate inputs. Intangible inputs generally include such factors as technology and economies of scale.

For this research, only the tangible input of labor is considered. The other factors have been excluded either because they are not significant to the measurement of productivity in prosecution and defender agencies, or because they are too complex to be undertaken within the scope of this research. For example, the effect of physical capital on output is treated as a constant here. Aside from being difficult to cost, capital investments in land, plants and equipment, as provided by state and local government funds, do not change rapidly over time. Although agency productivity may be constrained by inadequate physical capital,

the fact that these conditions tend to remain stable for long periods of time has resulted in our excluding their effects in this study.^{14/}

In like manner, intermediate inputs which are defined as purchases of goods and services by one firm from another, either represent such a small proportion of the set of resources available to prosecutors and public defenders or, generally, remain in a constant proportion. Therefore, for this study, they, too, are assumed to have minor effect on changes in productivity. If changes in either of these areas do take place, such as building new courthouses or shifting to contracting for defense services, they are of such magnitude that their effects are readily observable and measurable.

The intangible inputs of technology and economies of scale have also been excluded from this study because we assume that their contribution is relatively small in this area. It is the nature of both of these agencies that they are generally restricted in size by jurisdictional boundaries, workload and court capacity. Economies of scale that are predicated on the aggregation of services and resources into larger and more efficient groups are not frequently available options for these agencies. Unlike police agencies, for example, which are proportionately larger in size and budget and which provide a wide array of services that can be directly affected by improved technology or even redistricting, the prosecutor and public defender agencies offer a much simpler environment. Their budgets are small in comparison to police and corrections; their output is primarily based on a single function, case processing for disposition; and even if policy changes occur, the effects are of a manageable and predictable scale.

Thus, our focus is on labor as the input variable. With this, we do not differ from the practices of many firms and establishments that also limit their

measurement of performance to labor productivity even though it is advantageous to save any input. There is further benefit in using a single factor productivity measure when the basis product is labor intensive and comparability is sought. It facilitates comparisons between other jurisdictions and ultimately simplifies forecasting labor requirements.

In this study, labor is defined as attorney manhours. Attorney hours are used because they consume the largest proportion of the agency's budget and resources, are the most variable in usage and can be measured with a fair degree of ease and accuracy. Clerical and supporting staff effort can either be proportionately distributed to each of the activities in the office or distributed proportionately to the attorney staff.^{15/}

Developing productivity measures in the criminal justice sector presents many of the same data needs and measurement problems which are associated both with industry productivity studies and single establishments or firms. In government studies, employment is commonly the best measured component and data are generated from either the Current Employment Statistics (CES) obtained from establishments or from the Current Population Survey (CPS) household data. The hours counted refer to one week of the month and the output measure, which forms the numerator of the ratio, generally refers to an entire month.

At the firm or agency level, hourly data reflects either hours paid for, hours at work, actual hours worked or, to be more refined, hours worked by type of work. Since there is a general trend to reduce the number of actual hours worked by increasing holiday and leave benefits, ideally, nonproductive input hours should not be included in productivity measures. The best measurement occurs when hours are counted for only those that involve work and not just presence in the work place. Depending on the definition selected, an agency

generally may find much of the data needed to measure productivity in its own cost accounting or payroll system and other internal records.

However, if actual hours spent working is to be the basic unit, special studies or special collections for short periods of time may be necessary. This is the condition imposed on prosecution and public defender productivity studies that use attorney effort as the measure of labor. By necessity, it requires reporting time in a manner similar to that used by attorneys in the private sector where their time is billed to a client.

Measuring attorney hours worked by type of work also introduces the concept of a weighted labor input. Industry productivity measures distinguish between production and nonproduction hours, and type of worker. An analogy can be made between attorney hours that are "billable" to criminal cases and those that are expended on activities not directly assignable to the disposition of a specific criminal case. In like manner, workers may be distinguished by attorneys and support staff. The former performs more variable activity; the latter's work is more stable. Further, since skilled attorney labor represents a higher input unit cost per hour of work, this suggests that for budgeting purposes, these educational and professional differences should be reflected. Although there is much variation in the selection and use of particular weights, generally, they are based on wages or earnings by type of worker because they reflect differences in marginal productivity and the different contributions to the productivity of the office. For our purposes, measuring the productive hours of attorney work and distributing the other hours of both attorney and support activity will satisfy this condition.

However, there are two issues that need consideration. First, is the level of detail set for the weighting scheme. The finer the categories, the heavier

the burden placed on the reporting system to provide accurate and complete data. Indeed, there may be some diminishing returns that set in. One should consider carefully, therefore, the use to be made of the productivity measures before designing too detailed a weighting system. If, for example, the productivity study is aimed at hiring and/or wage and salaries adjustments, then differences in salary levels of attorneys may be important and such detail probably should be included in the reporting system. If, on the other hand, measuring agency productivity as it is affected by attorney and staff utilization and allocation patterns is the objective, then only this type of differentiation need be made.

The second issue appears when comparisons are to be made between jurisdictions. Since regional variations in the cost of living are reflected in salary and wage differentials, the ability to compare cost weighted labor hours across offices is precluded. However, if labor is weighted by type of effort, or hours expended to dispose of workload, this problem is reduced as long as the work categories are comparable. In the long run, weighted productivity measures should be considered as complements to, rather than replacements for, the unweighted measures. Then, both comparability and internal analysis needs can be met.

Even though weighted productivity measures are most commonly used for cost analysis since manhours are weighted by the average hourly wage or salary rate, for our purposes they are more valuable for their ability to rationalize and distribute workload in an office. When output of the productivity ratio is defined as case dispositions and the input as attorney hours of effort, then the development of case weighting systems is a natural consequence. Labor input, defined by the hours of attorney effort required to bring cases to disposition becomes a significant factor in explaining changes in output, and its dynamics need clarification so that measurement systems can be installed. One way to observe this is

to examine recent attempts to develop weighted caseload and the issues that they generate.

EFFECT OF LABOR IN WEIGHTED CASELOAD SYSTEMS

Moved by the need to assess its long term resource requirements and sparked by an initiative to unify its systems,^{16/} the courts and judiciary have been leaders in the development of weighted caseload systems. Much of the important research in this area occurred at the Federal level through the Federal Judicial Center and the Administrative Office of the U.S. District Courts and from work done in the states of California and New Jersey. The need arose because simple counts of filings and dispositions were inadequate to support planning and budgeting efforts. It was clear that the amount of time and skill needed at various parts of the adjudication process and required by different types of cases significantly affected the output of the courts. Thus, the concept of case weighting was adopted to provide a more meaningful measure of output and give insight into resource requirements.

The notion of case weighting models was expressed simply by Gillespie,^{17/} as follows:

$$W_i = t_1 f_1 + t_2 f_2 + \dots + t_j f_j + \dots + t_n f_n \quad (1)$$

where: W_i = the case weight -- the average number of judge hours required to process a case of type i from filing to disposition

t_j = the average judge time required to accomplish the total of n activities required for a case of type i , and

f_j = the frequency or average number of times activity j is conducted per case filed of type i .

This formulation has been most commonly used to estimate judicial workloads which can be derived from weighting annual case filings or dispositions as follows:

$$\text{Total court workload in estimated judge hours} = W_1 F_1 + W_2 F_2 + \dots + W_j F_j + \dots + W_n F_n \quad (2)$$

Where F_j = the number of annual filings of cases of type i .

To convert this measure of workload into the number of equivalent judgeships (EQJ) needed to process the workload, the total court workload is divided by the number of hours per judgeship (HPJ) which represents the number of hours on the average available per day for case related work. The transformation is:

$$\text{EQJ} = \frac{\text{Total court workload in estimated judge hours}}{\text{HPJ}} \quad (3)$$

A number of management and administrative benefits flow from case weighting systems. Weighted caseloads are more responsive in measuring demands for service because they allow for the measurement of a change in the mix of cases. Comparison between actual judgeship hours to equivalent judgeships are possible and the ratio of workload or output to judgeships can be computed. With such a technique, differences among courts can also be obtained by computing weighted case output as a ratio to judges available to form an index of average judicial output.

This last exercise, however, points up the fact that average judicial output is not an indicator of productivity unless the court is operating at capacity. It raises the issues of capacity and identifies it as a measurement problem that will have to be resolved, before the efficiency of a court or agency can be evaluated. The issue of capacity can be avoided if weights are derived to measure relative differences in output rather than measuring maximum or optimum levels.

In 1979, the Federal Judicial Center conducted a District Court Time Study^{18/} (Flanders, 1980) to update previously developed case weights and to refine the methodology used to generate these weights. As the authors made very clear, the study could not evaluate capacity or efficiency. "The case-weight survey was designed exclusively to produce a relative measure. There is no attempt in this report to make specific statements about the correct total number of judges the federal judiciary needs. ...The survey calculates a national average for case types and applies that to every district. Therefore, the differences from district to district resulting from this survey can only result from differences in the mix of case types, not from differences in the difficulty of a particular type of case in a particular district."^{19/}

This approach was adopted purposefully by the Federal Judicial Center because priority was given to the development of national, comparative statistics which would show variations among districts but not identify the reasons for them.^{20/} In using a weighting system based on averages and not reflective of local operations, the ability to examine individual court performance and productivity was precluded.

Interest, through sporadic, never really expanded in this area until budget reductions became a reality and productivity emerged as a management issue. It was then that management information systems were developed to support it. In 1978, the Law Enforcement Assistance Administration awarded a grant to the National Legal Aid and Defender's Association to conduct a feasibility study for use of management information systems in public defender offices. The result of this study and subsequent work by NLADA was the development of the AMICUS system.^{21/} Its primary purpose was to provide defenders with effective internal management mechanisms which would measure individual attorney productivity, ensure even caseload and caseloads among attorneys and measure the quality and quantity of work.

The AMICUS system captures the amount of effort expended by attorneys on individual cases. It is presently installed in some thirty to forty jurisdictions, generally as a manual-type system. Because it captures attorney effort spent on cases in tenth of an hour intervals, and because it also records this information by some general categories of activity such as fact finding, negotiation, and client contact, it may provide an important data base for the analysis and development of case weighting systems.^{22/}

Prosecutors have not shared with their defender colleagues a strong interest in developing case weighting systems. Part of this may be due to the fact that they generally have more resources than defenders to process the workload and hence experience less pressure to develop these management tools. Part may also be due to the rejection of this legitimate management aid because of a traditional resistance to recording time by activity. For whatever reason, there is to our knowledge only one prosecution data base that has recorded attorney activity in tenth of an hour intervals. This file, emanating from the County Attorney's office in Des Moines, Iowa, forms the basis for the results presented here.

The purpose of this research is to measure the amount of effort expended by attorneys with respect to processing their workload and bringing it to conclusion. In this way we can measure one portion of labor needed to produce output and use this to represent the labor productivity of an agency. Since we are measuring only "case billable" time (that which could be billed to a client if the attorney were in private practice), ideally the measures should be supplemented by other non-case billable time if the full cost of attorney effort is to be determined.

Knowing the dynamics of the "case billable" time process should let us explain how attorney effort is expended to bring cases to disposition and how this effort is distributed among the work in the office. It should identify the factors which should be included in the measurement system and it should yield some indication of the range of variation that exists both among jurisdictions and between the prosecution and public defender components of the adjudication process. The result should isolate the issues and problems associated with measuring the productivity of prosecution and public defense.

DATA SOURCES FOR THIS STUDY

Three files are examined here. The prosecutor's data was collected from the Polk County Attorney's Office in Des Moines Iowa. It was based on a 10 percent systematic sample of cases closed in the time period between July 1, 1979 and June 30, 1980, and includes 334 cases.

Attorney effort was recorded as an activity took place and thus was not retrospective. Each time the attorney worked on a case, he or she filled out a time slip which recorded the type and the amount of activity. Thus the figures relate to case billable time and not total attorney time available. The time slips were collected and stored in the file folder. The slips were coded for the data base in addition to the disposition, sentence and some individual case characteristics that we assumed would affect the effort expended.^{23/}

The State Public Advocate in Kentucky requires the reporting of attorney effort using the NLADA AMICUS system. The data collected by this office includes 99 offices, 21 of which have full time public defenders. It includes 7,555 cases distributed rather uniformly over the state but excluding the larger urban areas of Louisville and Jefferson. However, it does not contain the rich set of individual case characteristics which are available to the prosecutor. In fact the

computerized tape made available for this analysis did not include the identification of the legal charge, specifying only whether it was a felony or misdemeanor. This information will have to be obtained on a sample basis at a later date.

Time data for the Kentucky file is recorded for each activity as it occurs and then summarized and transferred to a case closing sheet at final disposition. Again we depend on the quality of individual record keeping and/or memory. However, as in the case of Iowa, it is hoped that the bias is that of a general undercount and not one which is peculiar to any special set of processes in either office.

A public defender's office in Nebraska supplied us with their AMICUS case closing sheets for 1982 which included 1,374 cases in all. The office has jurisdiction in a relatively urban area which contrasts with the smaller jurisdictions in the Kentucky sample. Being more urban, it corresponds closely to the jurisdiction served by the Polk County, Iowa, prosecutor's office. The data collected in Nebraska was collected under the same guidelines as those used in Kentucky, both systems being based upon the NLADA AMICUS system; therefore they should share some of the same measurement characteristics.

In the next section, the major factors that affect attorney effort and, ultimately, productivity are described.

FACTORS AFFECTING ATTORNEY EFFORT

The level of detail necessary for measuring productivity should be kept to a minimum while satisfying the uses to which the measures will be applied. If the primary objective is to determine the productivity of an office or an agency for management evaluation and budget planning purposes, then the level of aggregation should be raised to the highest point possible, supported by statistical systems designed to analyze the information. This would be in contrast to the level of

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detail that would be needed to evaluate individual attorney performance or productivity where case characteristics would assume greater importance to the collection process.

To meet these management and planning needs the analysis was directed at finding the smallest number of factors which explained differences in levels of attorney effort. Many of these factors are self-evident such as differences in effort placed on misdemeanor and felony cases. Others were not so evident at first, but could be interpreted reasonably after the analysis identified them as significant.

From the analysis, we found that the amount of attorney effort expended on criminal case processing was significantly affected by four factors: (1) the dispositional route of the case; (2) the type of offense; (3) the severity of the sanction attached to the case; and (4) the criminal history of the defendant. The following figures are illustrative of the impact of these factors on attorney effort. Since not all the information was available from each of the data sources, some comparisons are incomplete at this time.

1. The dispositional route of the case.

One can classify case dispositions according to the route they follow into the broad areas of trials, pleas and dismissals. This classification can be further delineated by distinguishing between jury and bench trials, and, for the public defender, adding a category called "partial service." This can be defined as the relinquishing of representation because of a conflict of interest, the client's retaining private counsel, or because only advice and counsel were offered. In each of these and similar instances, the client was provided "partial service" and concomitantly, little attorney effort was expended. In Nebraska, average effort for cases partially served was 1.2 hours.

As Figure 1 indicates, proportionately, the largest amount of attorney effort is expended when cases are disposed by trial and particularly, as the Iowa data indicates, by jury trial. Although the levels of effort differ considerably among the jurisdictions (a matter to be addressed separately), the proportional distribution is similar. Therefore, the use of averages without respect to the dispositional routes is not recommended.

2. The type of offense.

It is not surprising that the more serious violent crimes not only engender more media and public attention but that they also consume more attorney resources. Offenses can be classified into two major categories: (1) those that distinguish between felonies and misdemeanors (and by inference, juvenile cases) and (2) those within the felony category which can be further labelled as high, average, or low effort offenses.

The high effort cases include those crimes which are generally violent and dangerous including homicide, kidnapping, rape, robbery, arson and burglarly. The low effort cases include crimes which generally involve property damage or loss and violations of the social order including stolen vehicles, stolen property, damage to property, fraud, sex offenses, drug and liquor violations, obstructing justice, disturbing the peace and trespassing. Both of these two groups impose significantly different levels of effort on the agency's resources.

Figure 2a shows some of the comparative differences in attorney effort by felony/misdemeanor distinctions. In addition, it should be noted that the high, low, average crime groupings presented in Figure 2b are compatible between the public defender in Nebraska and the prosecutor in Iowa to the extent that the Iowa sample size was large enough to permit matching by crime type. For example, both high groups included homicide, kidnapping and arson and the low groups agree

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with respect to drugs and sex offenses. The only offense to date which appears to produce opposite levels of effort is that of driving under the influence. It requires high effort of the public defender and low effort of the prosecutor.

3. The severity of the sanction attached to the case.

Another factor affecting the distribution of attorney effort is based on the severity of the sanction. As the Nebraska data indicate, much more effort is expended on cases where the sanction is severe and long prison terms are imposed. Relatively little effort is given to those criminal matters that could result in fines, probation or even short jail sentences.

Figure 3 shows the differences in average attorney effort expended by type of sanction. Because the data are available from only one defender jurisdiction, the effect of this factor needs to be further validated. For the time being, however, it should not be rejected as a factor to be included in a measurement system.

4. Criminal History

The seriousness of the defendant's criminal record also appears to play a part in distributing the amount of effort expended by attorneys on cases. From the Nebraska public defender data, the fact that the defendant had one prior felony conviction or was a habitual criminal produced more effort on the part of the public defender. Yet no such significant differences were found for defendants with no prior record, no felony convictions or even with multiple felony convictions. We interpret this result to mean that where there is a chance to reduce the likelihood of a jail or prison term (1 prior felony) or the length of sentence (habitual criminals), then the public defender is expending extra effort on these cases.

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Figure 4 shows the average differences in these levels of effort for the Nebraska data. Again, the significance of this factor needs validation elsewhere; especially, to determine whether it is unique to defender offices or whether prosecutors react in a similar manner but for different reasons; for example, to increase the sanction.

In conclusion, it is interesting to note the difference in the character of the two sets of factors which emerge as important in explaining different resource utilization patterns. The first set is based on descriptive and factual conditions which are fairly stable and easily collected. The type of offense and the criminal history of the defendant are descriptors that are generally available at the onset. The other set includes factors that are only available retrospectively after cases have been disposed of, and can be described only in probabilistic terms. This latter estimation would be necessary if the objective was to use this information for case assignments or scheduling matters. Then one would have to estimate the likelihood of a case's being disposed of by trial or resulting in incarceration. If other objectives are sought, such as measuring the productivity of an agency, then one could use closed case information.

ALLOCATION OF EFFORT AND PRODUCTIVITY

Despite the significantly different levels of effort displayed by the jurisdictions in this study, the proportional distribution of the work is remarkably similar. In all the jurisdictions, the amount of effort expended on disposing cases by trial is in the range of 23 to 28 percent; that expended on dispositions by pleas of guilty ranges from one half to two thirds of the agency's total effort.

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Only dismissals present a slightly different pattern, with the public defenders spending more effort to obtain this type of disposition than the prosecutor (a logical event).

Figure 5 shows this distribution. It suggests that the levels of effort are very variable and possibly subject to change. We do not know, for instance, whether 69 hours for trial dispositions is "too high a level" or whether 20 hours or even 2 hours is "too low" since we do not have a standard or guidelines for comparison. It also suggests that different levels of productivity can be achieved by distributing the workload in a slightly different manner.

In this section, we will examine the dynamics of these effects by two examples. The first illustrates the effect of a 10 percent reduction in trials on the capacity of the system. This is not an unrealistic position if the prosecutor institutes policies and procedures that enhance dispositions by plea such as improved screening, open file discovery, pretrial conferences, and negotiation.

As Figure 6 shows, a 10 percent reduction in trials in Kentucky would mean 38 fewer trials and the attorney hours freed up could be used to dispose up to 78 cases by pleas (a net increase of 40 dispositions); or up to 39 dismissals (a net increase of 1 disposition). The fact that the dispositions are weighted by the average amount of effort needed to bring them to closure, adds a powerful management and budget tool to the agency's store.

In comparison to Nebraska, where the levels of effort are substantially higher, the Kentucky public defenders can produce numerically more dispositions than their Nebraskan colleagues. When the 10 percent reduction in trials is distributed in Nebraska, it means that 2 fewer trials will be conducted and the results will be to increase the capacity of the system by disposing of up to 13

more cases by pleas (a net increase of 11 dispositions) or up to 7 more dismissals (a net increase of 5 dispositions).

The purpose of this comparison is to show not only how changes in the mix of dispositional routes can affect the productivity of the agency but also to show how differences in the levels of effort expended affect productivity. Clearly the low levels exhibited by the Kentucky data allow for higher volumes of case dispositions. The salient question, of course, is to what effect on quality?

The second illustration presented here shows the impact of increases in crime and how agencies may respond. We assume here that the Iowa prosecutor is faced with a 10 percent increase in crime. As Figure 7 shows, the office is presently distributing its effort in the manner illustrated by Figure 7a. Twenty-eight percent of its cases are disposed of by trial, and two thirds by guilty pleas. A 10 percent increase in work could be processed in two possible ways. First, by increasing the capacity of the office to handle the higher volume through attorney and staff increases while maintaining the present dispositional distributions (Figure 7b). Secondly, the office could look to change the distribution of effort in such a manner that the capacity remains the same but the attorney hours are distributed more "efficiently" to absorb the extra capacity. (Figure 7c).

The salient question stills remains, to what extent can resources be redistributed without violating the quality of justice being dispensed? Obviously, we can never reduce trial dispositions to zero nor can we increase the dismissal rate beyond certain bounds. Yet if pleas are induced, then when should inducements cease before inequities set in?

CONCLUSION

We have seen that efficiencies can be installed in public service delivery systems. We also have seen that it is important to measure the amounts of effort required by agencies to deliver these services. For the prosecutor and public defender, measures of productivity based on attorney effort provide not only valuable insights into the workings of the agency by describing how effort is being distributed within a policy setting, but they also can be translated into cost functions which will satisfy budget and planning efforts in addition to comparative studies.

Productivity measures can serve as the keystone in pulling together and supporting future studies in the areas of efficiency, effectiveness and equity. By measuring and describing the amount of effort expended to produce case dispositions a base is established for future research in these other important areas.

We began by noting the GAO criticism that performance measurement systems are not being incorporated into important decisionmaking processes including budgeting; and we hypothesized that the reasons why these conditions exist is because little attention has been directed to this area. The results of this study supports both of these areas. They clearly agree with the Usher/Cornia findings about the absence of useful standards of performance and they suggest future research into developing definitions of capacity, efficiency, quality of output and equity.

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FOOTNOTES

1. This report was supported by NIJ Grants 80-IJ-CX-0032 and 82-IJ-CX-0028, awarded to the Jefferson Institute for Justice Studies, Washington, D.C. The data presented and views expressed are solely the responsibility of the author and do not reflect the official positions, policies or points of view of the National Institute of Justice, or the U.S. Department of Justice.
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- Science Association, November), 1976, p.16.
11. Reiss, A.J., "Discretionary justice." Handbook of Criminology. Glasser D. (ed.) Rand McNally College Publishing Company. Chicago, Ill., 1974
12. Usher and Cornia, op. cit., p. 234.
13. White, Bayla F., "The Atlanta Project: How One Large School System Responded to Performance Information," Policy Analysis 1 (Fall), 1975, pp. 656-691.
14. They do assume more importance if comparative studies are being made but for "within" agency studies, one can hold their effects constant.
15. Previous studies (Jacoby, Joan E. and Edward C. Ratledge, "A Feasibility Study for Cost Analysis of Plea Bargaining," A paper submitted for the Project on Plea Bargaining in the United States, Georgetown University, Institute of Criminal Law and Procedure, August, 1976; Ratledge, Edward C., "An Analysis of the Kansas City Trial Team Experiment." A paper prepared for the National District Attorneys' Association, May, 1976.) have shown that with the exception of investigator time, the estimates for labor input from support staff can be distributed proportionately to activities with little loss of reliability. If investigators are utilized by an agency, however, they should be considered as variable inputs and subjected to measurement.
16. National Advisory Commission on Criminal Justice Standards and Goals, Courts. Washington, D.C.: Government Printing Office, 1973.
17. Gillespie, R., "Judicial Productivity and Court Delay: An Exploratory Analysis of the Federal District Courts," Visiting Fellowship Program Report, National Institute of Law Enforcement and Criminal Justice, 1977.
18. Flanders, Steven, The 1979 Federal District Court Time Study, Washington, D.C., Federal Judicial Center, 1980.

- 19. Ibid, p.76.
- 20. The weights are used by the Administrative Office of the U.S. Courts and presented in the Report "Management Statistics for U.S. Courts," (Director of the Administrative Office of the United States Courts, Washington, D.C.: U.S. Government Printing Office, 1982) as weighted filings. This figure used in conjunction with the volume of actions per judgeship forms the basis for comparative examination of District Court workload.
- 21. National Legal Aid and Defenders Association "AMICUS." Washington, D.C.: NLADA, (1980).
- 22. Just recently, the National Institute of Justice has awarded a grant to the National Legal Aid and Defender Association to conduct a research project which would produce case weighting systems for public defender offices.
- 23. There are, of course, the usual problems with such a data collection process. It depends upon the good will of the employee, the completeness and the accuracy of the measurment, and the inclusiveness of the reporting. This latter problem is probably the most disconcerting. If the attorney is writing a letter or a brief, or holding a conference or taking a call in his office, then the reporting should be fairly good. Not so certain is the quality of the data provided from a conversation held in the hallway or about those activities where multiple cases are being worked on at the same time.

It is also difficult to estimate the degree of bias, if any, at this point. We assume that if there is bias it is constant and randomly distributed across the data base. To obtain some insight into the bias from undercounting and in lieu of an actual audit procedure, the number of events recorded on the time slips by the Polk County prosecutors were compared to the number of formal court appearances noted on the case folder. The results of this

comparison showed that the estimated average number of formally dated events from the file folder was 2.6 with a standard deviation of 1.9. In contrast, the average number of reported time slips was 6.7 (with a standard deviation of 6.5). This leads us to believe that there is probably not substantial underreporting. It also points out the difficulty of trying to estimate time or activity purely based upon the information written on a file folder. If many time consuming activities such as screening or conferences are not reported on the file folder, the level of effort may be seriously underestimated.

Figure 1

Average Levels of Attorney Effort by Dispositional Route

Jurisdiction	Average Attorney Hours for			
	All Cases	Trials	Pleas	Dismissals
Kentucky Defender	0.8	2.1	0.7	0.6
Nebraska Defender	6.0	69.2	8.3	4.4
Iowa Prosecutor	5.2	20.2	4.0	4.7
		Jury Trials	22.6	
		Bench Trials	15.2	

Figure 2a

Attorney Hours Average Expended by Type of Case and Jurisdiction

Jurisdiction	Average Effort (hours)		Ratio Felony to Misdemeanor
	Felony	Misdemeanor	
Kentucky Defender	0.8	0.3	2.6
Nebraska Defender	6.8	2.3	3.0
Iowa Prosecutor	5.2	n.a.	--

Figure 2b

Average Attorney Hours Expended by Offense Groups - Nebraska Public Defender

Group 1 - High Effort	Avg. hours	Group 3 - Low Effort	Avg. hours
Homicide	8.6	Stolen vehicle	2.2
Kidnap	19.2	Fraud	2.9
Rape	11.7	Stolen property	2.9
Robbery	16.0	Damage property	3.9
Arson	7.8	Drugs	3.9
Burglary	5.9	Sex offenses	1.6
		Liquor laws	1.2
		Obstruct	1.9
		Disturb peace	1.8
		Trespass	3.3
Group 2 - Average effort			
All other offenses requiring 4.3 - 5.3 hours			

7-8.
Figure 3

Average Hours Expended by Type of Sentence
Nebraska Public Defender

Type of Sentence	Frequency	Average time
Fine	124	2.5
Probation, no jail	52	9.7
Probation with jail	23	8.5
Jail, to 30 days	98	4.9
Jail over 30 to 180 days	61	8.1
Jail 180 days to 1 year	25	15.2
Prison, 1-2 years	36	10.3
Prison, 2-5 years	12	11.4
Prison, 5-10 years	6	56.8
Prison, 10-20 years	2	47.1
Prison, over 20 years	2	58.0
Average	441	7.8

39,

Figure 4

Average Hours Expended by Criminal History
Nebraska Public Defender

Criminal History	Frequency	Average Hours
None	207	3.4
Juvenile only	52	3.2
No felonies	326	5.0
One felony	87	12.1
Many felonies	109	5.8
Habitual Criminal	35	13.8
Average	816	5.7

Figure 5

Distribution of Weighted Manhours For Felonies
by Jurisdiction and Dispositional Route

	Average Effort	Number Cases	Weighted Manhours	Percent Distrib.
<u>Public Defender</u>				
1. Kentucky				
All cases	0.8	3627	2902	100.0
Trial	2.1	375	788	26.7
Plea	0.7	2138	1497	50.7
Dismiss	0.6	1114	668	22.6
2. Nebraska				
All	6.0	709	4254	100.0
Trial	69.2	14	969	22.7
Plea	8.3	280	2324	54.5
Dismiss	4.4	140	616	14.4
Partial Service	1.3	275	358	8.4
<u>Prosecutor</u>				
1. Iowa				
All	5.2	2621	13629	100.0
Trial	20.2	190	3838	28.1
Plea	4.0	2277	9108	66.6
Dismiss	4.7	154	724	5.3

Figure 6

Effects of Ten Percent Reduction in Trials
on Kentucky and Nebraska Defender Effort

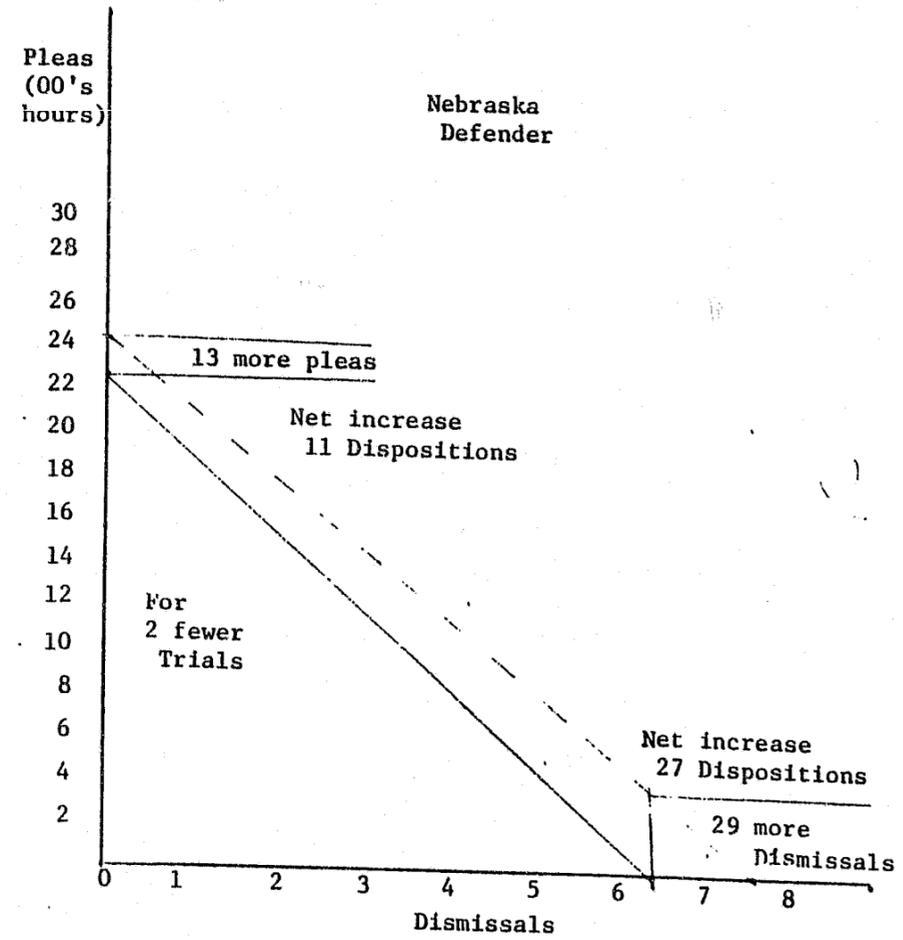
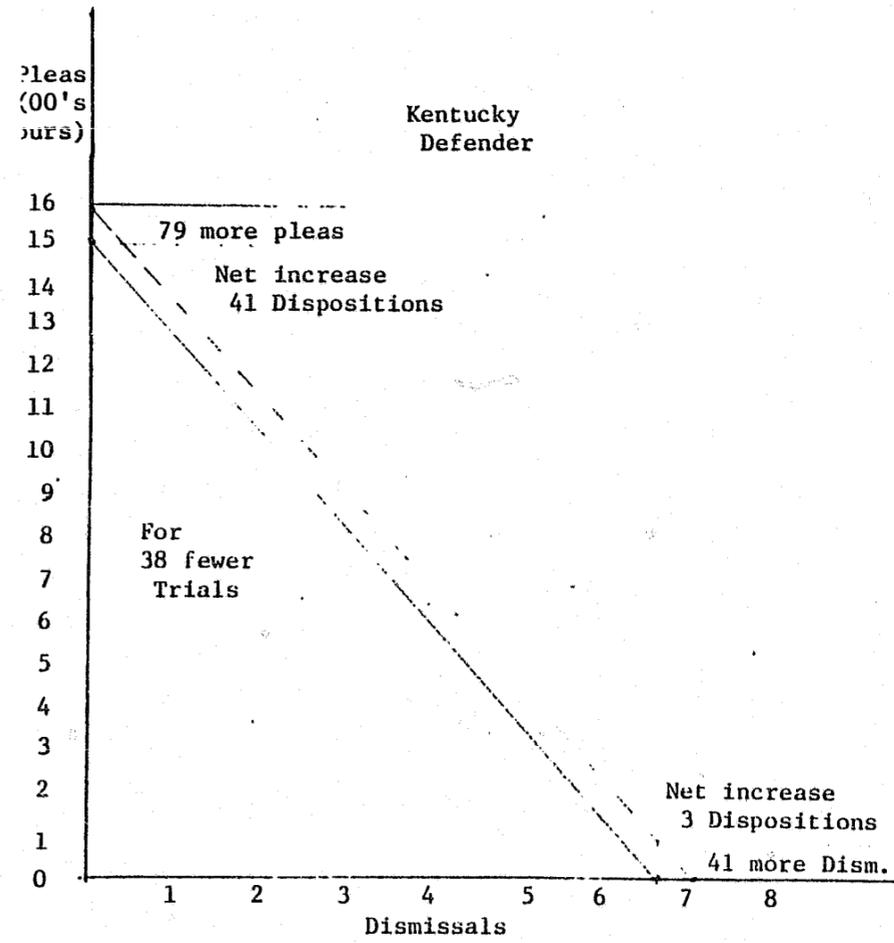
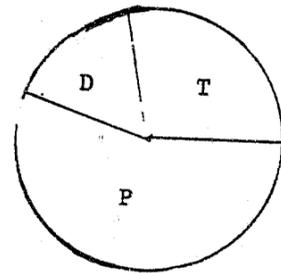


Figure 7

Responses to Ten Percent Increase
in Felony Crimes

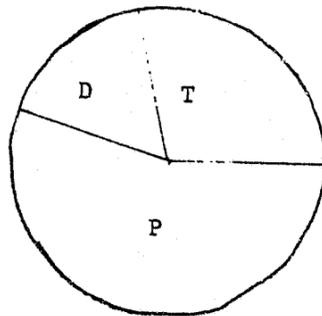
7a. Percent Distribution
of effort
(13670 attorney hours)

	<u>No</u>	<u>%</u>
Trials	190	7
Pleas	2277	87
Dismiss	154	6



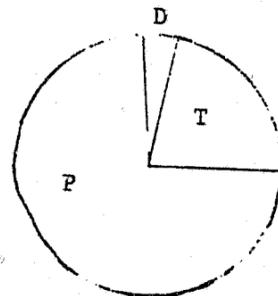
7b. Increase
capacity by 10 percent
(15037 attorney hours)

	<u>No</u>	<u>%</u>
Trials	200	7
Pleas	2505	87
Dismiss	169	6



7c. Redistribute
work to absorb increase
(13670 attorney hours)

	<u>No</u>	<u>%</u>
Trials	147	5
Pleas	2552	91
Dismiss	105	4



END