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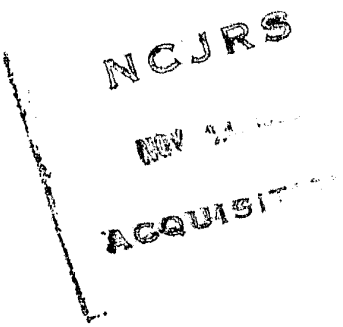
Some Costs of Continuances

A Multi-Jurisdictional Study



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CONTENTS

	Page
List of Tables	iv
List of Figures	v
Acknowledgments	vi
Findings and Conclusions	1
1. Assessing the Cost of Continuances	9
2. The Cost of Continuances	21
3. Continuances and the Adjudication Process	26
4. The Cost of Being a Witness	43
5. Alternative Costing Methodologies	66
Selected Readings	65

LIST OF TABLES

Table		Page
F.1	Percent Increase in Workload Created by Continuances	2
F.2	Cost of Continuances	3
F.3	Percent Distribution of Prosecutor's Continuance Costs	3
F.4	Percent Distribution of Defender Continuance Costs	4
F.5	Adjusted Labor Costs for Continuances	5
F.6	Ratio of Adjusted Continuance Labor Costs	5
2.1	Average Continuance Rates by Jurisdiction	22
2.2	Hours of Attorney Effort for Continuances	22
2.3	Labor Costs of Continuances	23
2.4	Adjusted Labor Costs for Continuances	24
2.5	Effect of Continuances on Full-Time Equivalent Attorneys	25
3.1	Distribution of Labor Rates by Process Step: Alexandria VA	27
3.2	Distribution of Labor Rates by Process Step: Charlotte NC	30
3.3	Distribution of Labor Rates by Process Step: Ventura CA	33
3.4	Distribution of Labor Rates by Process Step: Pittsburgh PA	36
3.5	Comparison of Rates of Labor Costs Expended on Continuances	39
3.6	Continuance Rates and Labor Costs by Process Step	40
3.7	Adjusted Continuance Labor Costs and Ratios by Process Step	41
4.1	Number of Witnesses Surveyed by Type of Crime	43
4.2	Time and Money Spent by Witnesses	44
4.3	Employment Costs to Witness	44
4.4	Type of Transportation Used by Witnesses	45
4.5	Average Transportation Costs for Witnesses	45
4.6	Food Costs for Witnesses	46
4.7	Special Arrangements for Witnesses	46
4.8	Experience of Witnesses	47
4.9	Distribution of People Affected	47
4.10	Distribution of Witness Costs	48

LIST OF FIGURES

Figure		Page
1.1	Felony Capacity Study: Bronx NY	15
1.2	Sample Log	17
1.3	Witness Survey Instrument	19
5.1	Marginal Product Curve	52
5.2	Short Run Marginal Cost Curve	52
5.3	Short Run Average Cost Curve	54
5.4	Long Run Average Cost Curve	54
5.5	Typical Court System Flow Chart	61
5.6	One-step Transition Matrix	63

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Findings and Conclusions

Background.

This section presents a summary of the findings and conclusions derived from the study of the costs of continuances to prosecution and defender agencies in adult felony and misdemeanor cases.

Continuances are defined as scheduled court hearings which were not reached for any reason, except to bring the case back for a disposition. The continuance rates used in this study differ from the traditional rate formed by dividing the number of cases continued by the number of cases scheduled for action.

In this study cases are weighted by the total amount of attorney effort spent out of court on case preparation and the time spent in court until the case was continued. Cases not continued, are measured by the same criteria. The different levels of attorney effort, that for cases not continued and those that are, represent the time (and cost) attributable to continuances. Attorney effort is self-reported from logs maintained for a 6 to 8 week period in 1984.

Costs represent agency labor costs in FY 83/84 which are distributed proportional to the amount of attorney effort required to process a case at a specific court hearing. For example, if an attorney spends 2.6 hours preparing for a preliminary hearing, then the cost of this time is the total of the attorney's salary and fringe benefits, the salaries and fringe benefits for support staff associated with preliminary hearings and a proportional share of the agency's administrative costs. The total dollar value represents a fully loaded labor cost for the preliminary hearing.

The cost estimates are derived from the National Baseline Information study of adult offender processing costs (NBI). Supported by the National Institute of Justice, this is a comprehensive cost analysis of 4 jurisdictions. The jurisdictions participating in the study are Alexandria, VA; Mecklenberg County (Charlotte), NC; Ventura County, CA and Allegheny County (Pittsburgh), PA.

This report makes three examinations. First, it describes where continuances are most likely to occur in the system and the effect on agency resources and costs.

Secondly, it examines the differences in rates and costs among the jurisdictions to compare the effects of court policy or procedures or other factors on continuances and their associated costs.

Thirdly, it reports on the costs experienced by civilian witnesses in making court appearances. Interviews were conducted with 196 witnesses in three jurisdictions to estimate the expenses related to court appearances in the areas of employment, transportation, food and special arrangements.

A fourth section which addresses methodological issues is included to add to the literature on the methodologies available for studies of process flow and decision-making. Two theoretical approaches, one using production functions and the other Markov chains, are discussed. The assumptions and data requirements of each are critiqued and their applicability for this and other related studies of the adjudication system is reviewed since they are not equally feasible.

The major findings and conclusions are presented here in summary form. For more detail and discussion, the reader is referred to the individual chapters.

Findings

Cost of Continuances.

Continuances are expensive. They add 12 to 24 percent more work to each prosecution or public defender agency.

Table F.1

Percent Increase in Workload Created by Continuances

Jurisdiction	Prosecutor	Defender
Alexandria*	13.0	13.0
Charlotte	16.1	16.0
Ventura	22.7	23.9
Pittsburgh	14.6	12.3

* Alexandria has an assigned counsel system. In lieu of self reported effort, its workload is distributed proportional to the prosecutor.

This increase translates into additional labor costs ranging from $78,000 to $1.1 million depending on the agency, salary differentials and court procedures. Expressed as the full time equivalent (FTE) of attorney labor and support, continuances use from 4 months to almost 6 years of agency resources.

Table F.2

Cost of Continuances

Jurisdiction	Cont. Labor Costs Prosecutor	Cont. Labor Costs Defender	FTE Attorney Years Prosecutor	FTE Attorney Years Defender
Alexandria	$56,874	$21,354	.77	.29
Charlotte	112,231	69,932	1.31	.99
Ventura	765,231	316,066	3.15	1.52
Pittsburgh	465,641	157,640	5.66	2.39

These figures show savings that result from a "continuance free" environment, which is unrealistic. However, they have value by acting as goals to be approached even though never reached. They also highlight the range of differences that may exist among jurisdictions in the United States and the waste of resources that are associated with them.

Continuances are not uniform throughout the adjudication process. Some steps have few continuances, others many. Additionally, the pattern does not appear to be the same among the four jurisdictions. Dividing the adjudication process into 5 parts illustrates the differences in the percent of effort associated with continuances. The parts are categorized as follows: intake (up to and including first appearance); accusatory (including preliminary hearing and/or grand jury); pretrial (from arraignment through pretrial motions and including guilty pleas); trial (bench or jury trial); and posttrial (presentence investigations, sentencing and post-conviction hearings). The effects are different for prosecution and defender systems.

Table F.3

Percent Distribution of Prosecutor's Continuance Costs by Process Step for Felonies, Misdemeanors, and Jurisdiction

Jurisdiction	Total Cost ($000)	Percent Felonies					Percent
		Intake	Accus.	Pre-trial	Trial	Post-trial	Misd.
Alexandria	$57	14	16	14	33	6	17
Charlotte	112	14	14	23	28	2	19
Ventura	765	9	13	13	15	4	46
Pittsburgh	466	*	21	53	11	15	**

* Intake and accusatory are combined for Pittsburgh

** Misdemeanors distributed are within felony categories.

Alexandria and Charlotte have similar distributions but the real differences occur in Ventura and Pittsburgh where in the former, misdemeanors absorb almost half of the continuance costs. In Pittsburgh's unified court system, the pattern shows high continuance costs in the pretrial area.

For public defenders and assigned counsel, the distribution of continuance costs differs from the prosecutor because the case-load is smaller and, therefore, not necessarily representative of the prosecutor's.

Table F.4

Percent Distribution of Defender Continuance Costs by Process Step for Felonies, Misdemeanors, and Jurisdiction

Jurisdiction	Total Cost ($000)	Percent Felonies					Percent Misd.
		Intake	Accus.	Pre-trial	Trial	Post-trial	
Alexandria	$21	15	17	15	34	6	14
Charlotte	70	14	14	20	16	1	35
Ventura	316	5	16	17	18	6	39
Pittsburgh	158	*	25	26	33	16	**

* Intake and accusatory are combined for Pittsburgh.
** Misdemeanors are distributed within felony categories.

Public defenders represent a proportionately smaller group of offenders than the prosecutor, therefore it is interesting but not surprising to observe different patterns in the cost distributions between the two systems. In Charlotte, this is most notable for misdemeanors which consume 35 percent of the continuance costs for the public defender. In Ventura, more continuance costs are expended on felony cases, especially in the accusatory, pretrial and trial stages. In Pittsburgh, the differences are most noticeable in the pretrial and trial stages. The implication of these differences is that one should not assume that continuances affect both agencies in the same way.

Comparative Analysis.

Making cost comparisons based on raw data is difficult and problematical. This is because there are a number of factors which affect these costs. They include salary differentials among the jurisdictions, the volume of work processed and the procedures used to process work. It is, therefore, not easy to determine whether one jurisdiction's costs are significantly different from another's using only the actual cost data.

We can obtain some idea of the relative differences in these costs if we adjust the data. Assuming that all the jurisdictions have the continuance rates exhibited by Alexandria, we can compute what the costs would be for the other jurisdictions and compare the relative differences. (Any one of the jurisdictions could have been used as the base. Alexandria was selected because it has the lowest continuance rates).

Table F.5

Adjusted Labor Costs for Continuances by Jurisdiction and Agency

	Labor Costs			
	Prosecutor		Defender	
Jurisdiction	No Cont.	Continuance	No Cont.	Continuance
Alexandria	$381,156	$56,874	$143,157	$21,354
Charlotte	377,198	60,833	141,834	22,677
Ventura	357,077	80,954	132,733	31,778
Pittsburgh	387,630	56,546	149,002	18,333

This comparison shows that there are some real differences masked by the raw data. The continuance costs in Ventura are higher than all the other jurisdictions even though its processing costs without continuances is lower. In other words, relative to the other jurisdictions, Ventura's continuance costs pose a serious drain its budget.

Standardizing the data to Alexandria also gives some insight into the affect of court procedures, policy and productivity on delay if we look at the different parts of the adjudication process. Expressing the costs of continuances as a ratio to Alexandria's costs shows the emphasis that occurs among the jurisdictions.

Table F.6

Ratio of Adjusted Continuance Labor Costs by Process Step and Jurisdiction

Jurisdiction	Total	Intake	Accus.	Pre-trial	Trial	Post-trial
Alexandria	1.0	1.0	1.0	1.0	1.0	1.0
Charlotte	0.9	1.2	1.1	2.0	0.9	0.1
Ventura	0.6	0.6	1.0	1.2	0.6	0.2
Pittsburgh	1.2	*	1.7	4.2	0.6	0.6

* Intake and accusatory are combined for Pittsburgh.

Alexandria has relatively higher continuance costs for the trial and post trial phases than any of the other jurisdictions. Charlotte has double the pretrial continuance cost of Alexandria but only a tenth of the posttrial costs. (This jurisdiction does not use presentence investigations extensively). Pittsburgh shows a relatively high burden of its costs associated with the pretrial phase. This may be due to the high volume of diversion decisions which are made during this process step.

If there is one implication from this comparative analysis, it is that court procedures and the policies of all the participants play a large part in the creation of continuance costs. If jurisdictional comparisons are to be made, however, adjustments for these factors should be made before any evaluation is attempted.

The Costs of Being a Witness.

Court appearances, whether continued or not, are costly to most civilian witnesses and victims. A survey of 196 witnesses in three jurisdictions (Allegheny County was excluded) estimated witness costs due to disruptions in (1) employment; (2) transportation; (3) food; and (4) special arrangements.

The average amount of time spent in court ranges from 3 to 4 hours at an average daily cost of $13.49 in Ventura, $27.06 in Charlotte and $32.86 in Alexandria. However, these averages hide a disparate pattern of costs.

Almost 20 percent of the witnesses reported that they did not incur any costs in coming to court; this included 34 percent of those interviewed in Ventura, 10 percent in Charlotte, and 20 percent in Alexandria.

For those who did incur costs, loss of income from employment was the most significant. In Ventura the average daily loss was $44.99; in Charlotte, it was $72.27 and in Alexandria, $85.01. Most witnesses who sustained losses in employment income were either self-employed or not able to take leave from their employer.

Sixty seven percent of the witnesses spent an average of $5.20 on transportation. The automobile was the favored mode of transportation in all jurisdictions but the costs for parking and gas varied widely from a low of $4.44 in Charlotte to $5.32 in Alexandria and $6.82 in Ventura.

Food costs were not considered a burden by the majority of witnesses. Only 10 percent in Charlotte, 12 percent in Alexandria and 24 percent in Ventura reported that they expected to spend more than usual for food. The average cost ranged from $2.14 (Charlotte), to $4.98 (Alexandria) to $6.97 (Ventura).

Many of the witnesses reported that they had to make special arrangements in order to appear at court. This included activities such as rearranging work schedules, postponing or canceling appointments, or finding child care. When a dollar value was placed on these special arrangements, it ranged from a low of $1.38 in Ventura to $2.50 in Charlotte to $7.23 in Alexandria.

Witnesses are mostly newcomers to the court system. In Charlotte 47 percent reported previous appearances in court; but this rate drops to 38 percent in Alexandria and 29 percent in Ventura.

Alternative Models for Adjudication Studies.

The methodological area of interest in this research centers on the type of analytical model most suited for measuring the flow of cases through the adjudication process, including delays imposed by continuances.

Two models are examined; one based on production functions and the other on Markov chains. The purpose of the study is to determine which model is preferable for this type of research.

Production functions are well suited to the examination of the adjudication process and models in this area are appropriate to use. However, since this study has data from only four jurisdictions, it is not possible to use production function models because there is simply not enough data to meet the models requirements.

Markov chain theory fits well within the adjudication system because it is based on the assumption that prior processing steps generate probability statements about the occurance of the next processing steps. This assumption reflects the real world of the adjudication process. Additionally, the data requirements can be satisfied. As a result, this is the model that is recommended for use here and for other studies constrained by too few data points.

Conclusions

Continuances are expensive. They not only add to the workload of the agencies in the adjudication process but they also are expensive to the taxpaying community since they may be viewed either as potential savings or as a way to provide better quality services. The availability of these resources for productive work may be one of the strongest arguments for reductions in continuances.

However, a cautionary note needs insertion here. There will always be continuances in any adjudication system. The difficulty lies in defining what is a tolerable level and what is not. The answers are not obvious but examining the many dimensions of this phenomenon and comparing the experiences of other court systems may be a helpful starting point.

The question not answered by this study, is what is an acceptable continuance rate? Perhaps one approach to solving this problem is to start with those jurisdictions with the lowest continuance rates, such as Alexandria and Charlotte and see to what extent these rates can be made even lower. Another approach might be to look within the adjudication system and identify the reasons why some parts are more prone to continuances than others. Clearly, there needs to be more knowledge about where continuances occur in the adjudication system and where they can be most directly affected by either policy or procedural changes.

However, the traditional measures of continuance rates are not recommended for these tasks. This study clearly shows that they are not very informative because they are based on the assumption that all cases and all court proceedings are equal in the levels of effort required. When effort is taken into consideration and attached to these events, then a better measure of the amount of loss which can be attributed to continuances is gained and better information is available to decision-makers.

The analysis of continuances and the costs of continuances in the adjudication process suggests two other conclusions. If one is to understand the phenomenon of court delay and attempt to reduce it by taking a tougher stance against continuances, then within an agency it is more efficient to identify those areas with the highest continuance costs and designate them as the primary targets for reduction.

However, comparisons between agencies or jurisdictions will suffer if costs are used as the measure. The fact that Ventura has the highest continuance costs relative to the other jurisdictions serves little evaluative purpose. Far more important in assessing the deleterious effects of continuances in a jurisdiction is the fact that the continuances rob Pittsburgh prosecutor of almost 6 attorney man-years and the Ventura prosecutor of 3. For comparative purposes, the resources consumed by continuances is a more reliable and realistic indicator than costs.

The study of costs incurred by witnesses is interesting. First, it shows that the costs incurred by witnesses are not uniformly high. Secondly, it appears that the major cost, that associated with loss of income from employment, can be mitigated with more liberal leave policies by the employer or some compensation to the self-employed. In either circumstance, the costs are not necessarily exorbitant; they can be estimated with a fair degree of certainty and if solutions are developed, they would offset the most important losses sustained by this group of witnesses. If the civilian witness is considered an essential part of the adjudication process, then more serious attention should be given to identifying the costs incurred by them and the ability of public agencies to support reductions in these out of pocket expenses.

1. Assessing the Cost of Continuances

The nature of court delay

Delay in the courts is a commonly perceived and frequently diagnosed problem. It is generally accepted that delay jeopardizes the defendant's right to speedy trial; hampers society's need for swift and certain convictions; erodes public confidence in the judicial process and strains criminal justice resources. (Neubauer, et. al., 1981). In the past few years court delay has received priority attention at the National Institute of Justice producing a variety of studies, research and evaluations, most notably by the National Center of State Courts.

The underlying assumption that delay is pernicious and harmful, however, is not usually tested; and the extent of its damage has rarely been estimated. This is due, in part, to the fact that it is an assumption and, in part, because empirical indicators of its effects are difficult to measure because they are often confounded by other events. For example, much was made of the effects of delay on the failure of witnesses to appear after a number of continuances frustrated their initial motivation, (Cannavale, 1976) but no link was made with the offsetting benefits produced by victim-witness programs pioneered by the Vera Institute of Justice (1977), which reduced no-shows. Assertions were made that delay forced the prosecutor into unfavorable plea bargaining situations (Heumann, 1975), but few empirical tests supported this notion. In fact, subsequent or parallel studies offered other theories: in one, the local legal culture was claimed to be a determinant in affecting court delay and plea bargaining practices (Eisenstein and Jacob, 1977; Neubauer, 1979); another viewed plea bargaining to be a rational response to a criminal justice decision-making process because it was efficient and effective in meeting agency goals (Jacoby, Mellon, Ratledge and Turner, 1982); still others assumed that little could be done about systemic delay, so focused on problem-specific, targeted areas such as pretrial release, career criminals and judicial administration. (Feeley, 1983: 186-187).

Whether self-serving or abusive, there is still the inevitable reality of the adjudication process. "The courts will always be inefficient." Cases will always fold at the last minute, jurors will always have to sit idle and be on call, and attorneys and witnesses will always have to wait." (Feeley, 1983: 187) In their attempts to reduce delay, eliminate its causes, and minimize its adverse effects, studies often ignored the fact that not all delay is disfunctional but rather

serves different purposes; some beneficial, some self-serving, some inevitable. No one disputes the fact that time is essential for the proper preparation of cases; the dispute arises over how much time is needed and when is justice abused because of self-interests or system overload. Banfield and Anderson highlighted one self-serving aspect of delay when they found in their Chicago study (1968) that 70 percent of the unexplained continuances requested by private attorneys appear to be related to efforts to obtain, or even boost, their fees.

Many people are affected by delay and share in the burden of its costs. Pretrial detention incurs costs for the sheriff, transportation services and courtroom security. Court continuances add to the workload and costs of prosecutors, public defenders, judges, court reporters, clerks of the court, police officers, victims and witnesses, and sometimes jurors.

Attempts to reduce delays are common. Sometimes, as in Detroit's Recorders Court, delay reduction is attempted by developing a "pure trial docket" where all pretrial motions are considered in separate hearings from the trials. Sometimes, as in Charlotte, NC, it is attempted by the prosecutor's control of the docket and the use of a weekly calendar call to schedule and manage the cases. Regardless of the form that these procedures take, they all have as part of their objective, the reduction of unnecessary costs and their harmful effects on the justice system. The task for the policy makers and managers is to minimize the inevitable costs of waiting by creating a court system which is efficient and capable of processing its workload. This can best be done with some knowledge about the dimensions of delay in the criminal justice system including its costs and effects.

Measuring delay is not an easy task and measuring its costs to the criminal justice system is even more difficult. While the time to disposition is the most frequently used indicator of delay, it does not reflect how much of the system's resources are being wasted nor how much the system's capacity for processing cases is reduced. What is needed is another approach to this question.

Performance measurement in the public sector is concerned generally with what services are being delivered, how well they are delivered and who provides and receives them. The measure most commonly associated with the delivery of services is productivity. Defined as the ratio of output to input, productivity rates take into consideration both the volume of services being provided and, if properly constructed, how well they are provided. In a broad, sense, productivity measures allow us to make quantitative statements about an agency's ability to allocate resources and produce expected outcomes.

Productivity measures are limited, however, because they do not identify the amount of slack that is contained in the production process. Although they measure the ratio of output to input in an agency, they are value-free and make no statements about how high productivity should be.

Unproductive time, or slack, may exist in two areas: first, in the work that is indirectly related to production (i.e. case dispositions) such as training, administration, conferences, correspondence and research; secondly, in direct case-related effort where redundant and unnecessary work may overtly take the form of continuances. We are hampered in our search for "ideal" levels of productivity because we simply have not determined what levels of indirect costs (which reflect work not related to case dispositions) are necessary and what are the highest levels of direct costs possible which produce the largest number of acceptable case dispositions.

Reducing indirect costs is an easier task than reducing the redundant effort which is caused by continuances. This is because the effects of change are controllable in the former instance by more efficient management and operational procedures. More problematical is reducing the unnecessary work caused by continuances because they are less predictable in nature since they are granted by the court; may not be in the agency's interest; and may even have some beneficial results. For example, if a case is ready for trial and both prosecutor and public defender have prepared their case outlines, talked to the witnesses, collected and assembled the evidence, only to have the case continued to another time, then is the effect entirely negative? Not necessarily, especially if the continuance results in a guilty plea in 2 days rather than a trial that would take 2 weeks. Does repetition improve the performance of the actors involved and the quality of justice? Is the same level of effort demanded each time? Just what are the benefits and/or liabilities of continuances?

Not only are there no empirical, quantitatively expressed answers to these questions but it may also be that remedies in either area, whether reducing indirect costs or direct costs associated with redundant case effort, are difficult to install because the inefficiencies or problems are systemic or attributable to practices and policies of other agencies. Indeed the phenomenon called local legal culture, the main cause of delay, has proven very intractable in many jurisdictions.

Poor docketing procedures may be correctable only by the court. Some legal procedures may be changed only by the legislature. Certainly, internal management improvements may reduce some part of inefficiency but there may be a residual amount that prosecutors or public defenders simply have no control over. The size of the residual is, as yet, undetermined but its existence should not be overlooked because it means that the "ideal" state of productivity may never be attainable if external agencies can control (and adversely affect) the internal productivity of others.

Scope of Study.

This study does not presume to address all these court delay issues but rather to examine a small part in an effort to determine the scope of these issues and their importance for future research. This study examines the effort expended by prosecutors and public defenders to bring cases to dispositions, estimates the incremental amount of work generated by continuances and thereby, obtains some insights into the effect of the court environment on the productivity of the agencies.

The court delay costs studied here relate to court continuances, and their effect on prosecution and public defender agencies. The amount of redundant work which is created by continuances in these two public agencies is estimated. Obviously, redundancy diminishes the capacity of these agencies to provide adequate services. This study does not examine other system costs such as those incurred by pretrial detention; nor does it attempt to measure the total cost to the adjudication process.

Attorney effort is our focus because it most accurately reflects the varying amounts of work needed by different types of cases and different dispositional routes. Attorney effort also consumes the largest portion of prosecution and defender agency budgets. Since the criminal justice environment has a fixed amount of resources available to process a variable amount of work, maintaining the highest levels of productivity without sacrificing quality is always a

primary concern. Decreasing the drain on these resources by reducing delay is clearly one means to achieve this goal. Thus, to the extent that continuances are liberally granted and backlogs become a way of life, the resource pool is drained unnecessarily and the productivity of the courts, prosecution and defense is diminished.

The economic implications are clear when one examines delay from this perspective. If for example, an attorney has 1,200-1,600 hours available annually for case processing (Ligda, 1976) and 10 to 15 percent of this time is used to prepare cases for the second and third time before a scheduled court hearing is actually conducted, then other case-related activities that could or should be performed must either be abbreviated or avoided. If the 10 percent figure is applicable to both the prosecutor and the public defender, the effect of delay is doubled, and the productivity of both agencies is reduced.

A second area of interest is the cost of delayed court appearances to victims and witnesses. A separate undertaking in this study is the estimation of the costs incurred by victims and witnesses to make court appearances and the extent to which these costs are unnecessarily incurred because the event occasioning their appearance was delayed.

Several methodological questions are raised by studies of this type. The most important is which of two techniques usually considered by researchers should be adopted; production functions or Markov chains. Each approach answers different questions, is based upon different assumptions and has different data requirements. Our study started with production functions as the basic approach but gave way to Markov chains after a more detailed examination of the data and our assumptions indicated that the production function approach was relevant but not feasible.

Objectives and questions.

The specific purpose of this study is to determine the effect of the court's continuance policy on the productivity of prosecution and public defender agencies and on the burden placed upon witnesses. A more general inquiry is the effect of external or exogenous factors, those over which an agency has little or no control, on an agency's ability to provide criminal justice services. Some questions which will be addressed in this study ask:

1. How much effort is expended by attorneys on each type of court hearing and how much additional effort is required if the hearing is continued?
2. Where in the adjudication process does most of this redundant effort occur and in what proportion to (a) total redundant time and (b) total available time?
3. What is the overall impact of court continuances on the productivity of the prosecutor and public defender? If continuances are reduced will this increase the resources available for case processing, speed up processing times, or allow for more case preparation, or any combination of the above?
4. Are the effects different on these two agencies?
5. Can differences be attributed to court continuance policies, procedural practices or structure.?

6. How much increase in efficiences should one expect from a reduction in continuances. What are the cost implications for prosecution, public defender services and the victim and witnesses?

7. What methodological approach is best suited for conducting these types of studies?

The results of the study presented here assess each of these specific areas and the more general area of estimating the costs of deferred decision-making in the adjudication process. Four jurisdictions were studied. They are Alexandria, VA; Charlotte (Mecklenburg County), NC; Ventura, CA; and Pittsburgh (Allegheny County), PA. The cost data are for fiscal year 1983/84.

Approach and Methodology

For this study, attorney effort is the basic unit of measurement. Attorney effort in the adjudication process is highly variable especially as it reflects the type of offense and the dispositional route of the case. Thus, it can be used alone to estimate the amount of work added by continuances or it can be expressed as a cost.

In order to estimate the effects of continuances on prosecution and public defender systems, three types of information are needed: (1) a statistical description of the adjudication process which measures the volume of cases being processed, their disposition points, and continuance rates for each of the court processing points; (2) estimates of the amount of effort expended by attorneys on cases; (3) the costs of this effort as reflected by expenditures for labor.

Statistical Descriptions.

Statistical information about volume and case dispositions is classified by five crime types: felonies are classified as violent, property, drug or all other; and misdemeanors are treated as a single category. Statistical data describing the offender processing flow is not always readily available by offense type nor for each adjudication processing step. Thus some of the statistics are estimated from samples of closed case files.

Each adjudication process step is identified and described because not all parts of the process produce continuances or require the same levels of work. The technique used to describe the adjudication process and to obtain estimates of continuances is based on a concept developed by the National Center for Prosecution Management (Jacoby:1972) called Snapshot Spin-around. Designed specifically for identifying areas where delay occurred, it was tested in the Bronx District Attorney's office and later applied to the lower court in Denver, Colorado.

The approach is rather straightforward. It requires counting: (1) all cases scheduled for each court hearing in a two week period; (2) the number that were reached on the date scheduled; and (3) the number that were not reached (or continued). Each activity point is monitored, including arraignment court, preliminary hearings, pretrial conferences and trials. At the end of the period, the results are tallied and continuance (or spin around) rates are

calculated. This is not a case tracking study; rather, it is a snapshot of each court's activity at different points in the process.

Figure 1.1 shows the results of the study in the Bronx. The fastest moving part of the process (arraignments) had no continuances; each arraignment scheduled was completed on the date scheduled. This was not true of the other process points where the spin around rate varied. While this original work yielded information about delay caused by continuances, it did not reach the issue of how much additional work was imposed by the continuances. This is the focus of the present study.

Each jurisdiction's annual case-load is distributed by process step and the location of dispositions is described. The estimates of spin-around at each of the process points is derived from the logs maintained by the attorneys. The logs serve two purposes; they estimate the continuance rates for the process steps, and the amount of effort associated with cases. In addition to time spent on a case, attorneys were asked to record which of the following results applied to the effort spent on the case being logged:

A. Hearing completed go to next step
B. Case disposed
C. Continued, not reached.
D. Continued for disposition
E. Continued, other
F. Failed to appear
G. Farmed out (public defender only)

The continuance rate at each process step was estimated from the sum of items C and E. Category A defined the normal progression of the case from one step to another. B is self explanatory. D reflects a condition which was not defined as redundant and, therefore, was excluded from an estimation of the continuance rate. It occurs when a plea or settlement has been reached and the case is continued for this final event to occur. We assumed that since the continuance anticipates a disposition, there is no redundant effort attached to its reappearance in court. Failures to appear are considered exits from the system in this study. G reflects a disposition common to public defenders, namely the transfer of the case to other counsel, either court appointed or private, for any number of reasons, conflict of interest being a major one.

Levels of attorney effort.

In order to obtain the levels of attorney effort expended on each process step and the additional amount of work incurred when the steps have to be repeated, we used logs maintained by attorneys at each of the jurisdictions for a period of time that ranged from 6 to 8 weeks. A sample log is presented in Figure 1.2

This log was developed for the National Baseline Information study. It served well for this study because it identified the amount of attorney effort expended on individual cases (identified by the column labeled complaint number). identified these cases by their felony (F), misdemeanor (M) or misdemeanor appeal (MA) designation, the defendant's name and the most serious charge (Charges).

Figure 1.1

Felony Capacity Study:Bronx NY

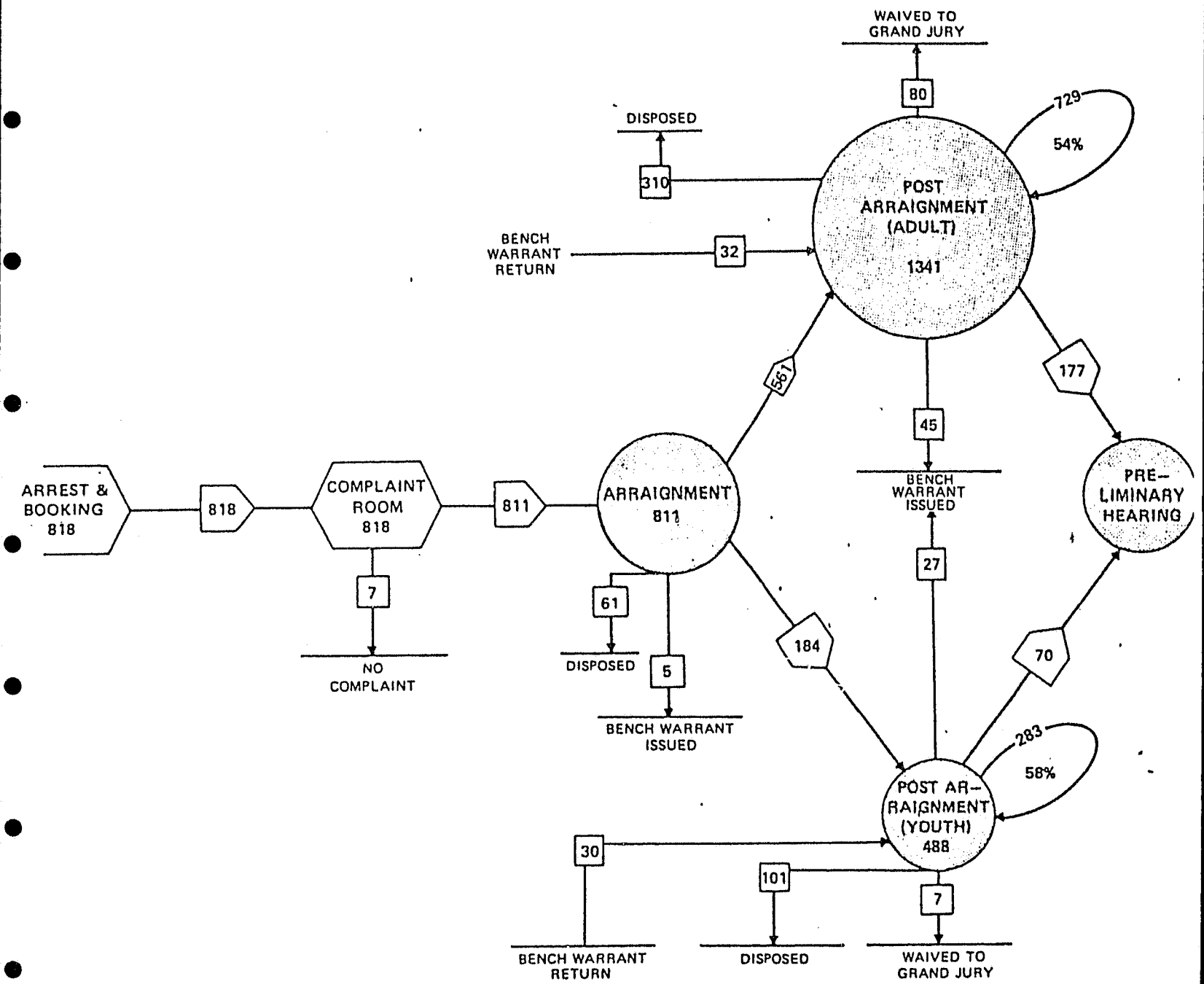


Figure 1.1(cont.)

Felony Capacity Study:Bronx NY

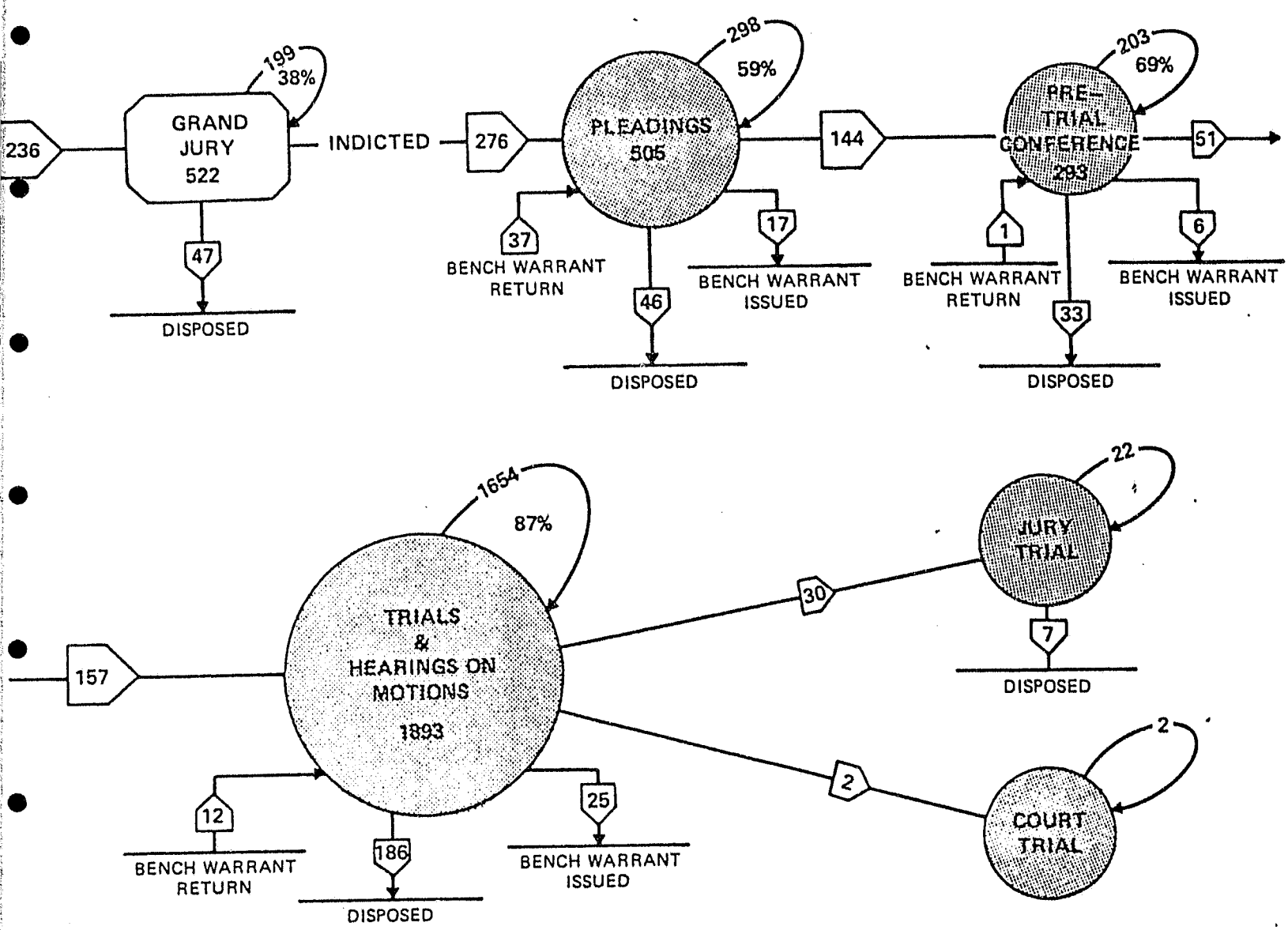


Figure 1.2

Sample Log

DAILY LOG FOR CRIMINAL CASE TIME

Date: _____

Attorney: _____

Assignment: _____

_____ TOTAL TIME WORKED (Hrs:Min)

_____ 1. on specific crim. cases (from log)

_____ 2. on crim. matters not case-specific (include traffic, juvenile)

_____ 3. on office admin. duties

_____ 4. on non-criminal matters (include involuntary commitments, appeals)

(see reverse for instructions)

ACTIVITY CODES FOR FELONY (F) OR MISDEMEANOR (M)

Activity	Related Step	Result
1. Papering*	10. Magistrates Court	A. Hearing Completed go to next step
2. Conference, Negotiation, Preparation for Court Appearance or Trial	11. Dis. Ct.- Bond/Counsel Set	B. Case Disposed
3. Case File Documentation	12. Probable Cause	C. Continued, not reached
4. Preparation for Sentencing or Presentence	13. Grand Jury	D. Continued for Disposition
5. Post Sentencing Procedures, Activities, Appeals	14. Admin. Court	E. Continued, other
6. Voluntary Dismissal*	15. Calendar Call	F. Called and Failed
7. In Court	16. Trials	G. Farmed Out (Public Defender Use Only
*Prosecution Use Only)	17. Sentencing	H. Not Applicable
	18. Prob./Parole Revoc.	
	19. Not Applicable	
	20. Wait	

Complaint Number	F/M /MA	Defendent's Name	Act. Code	Rel. Step	Rslt Code	Hrs:Min	Charges	Notes
						:		
						:		
						:		
						:		
						:		
						:		
						:		
						:		

In order to attribute the time spent by the attorneys on each case to its proper location in the adjudication process, the attorney also recorded: (1) what activity he performed (using the Activity codes presented on the form and recording the appropriate one in the column labeled Act. Code); (2) the nearest related step in the adjudication process which was entered in the column Rel. Step; and (3) the result of the activity.

Since much of the attorney's work is spent outside of court hearings, it was necessary to link this effort to the next court hearing. As a result, the related step includes not only effort spent in court (which can be distinguished by a code 7 under activity) but also effort spent in preparation for this court hearing.

Excluded from this study are cases involving juveniles, traffic and moving violations, and appeals.

Estimating Labor Costs.

The costs used in this study are fully loaded labor costs. The basic unit is the attorney's salary and fringe benefits expended in FY 83/84 on adult criminal case prosecution or defense. To this is added the salary and fringe benefits of all other personnel in the agency distributed according to the percent of time they spend on adult criminal case processing. In addition, the administrative costs of the agency are also distributed proportionately onto these labor costs. Thus, the hourly rate reflects the total direct and indirect labor costs to the agency for processing adult criminal cases.

Excluded from the estimates are other direct costs for travel, contractual services, rent, utilities, equipment, etc. Also excluded are those administrative costs incurred by other agencies, such as county financial and administrative costs expended in the course of administering these activities. 'Capital and building costs are also excluded from these estimates.

For further information and statistical tables detailing the distribution of these expenditures, the reader is referred to the research report for the National Baseline Information study.

Estimating victim and witness costs.

A special study was made of the costs incurred by victims and civilian witnesses for court appearances. Court appearance costs are classified by the following categories: 1. employment or loss of work; 2. transportation; 3. food; 4. special arrangements. It was assumed that each court appearance would produce essentially the same set of costs for the witnesses regardless of whether the case was continued, disposed or went forward.

To obtain witness court costs, an average of 60 witnesses were surveyed in each jurisdiction except Allegheny County. All witnesses scheduled for court appearances were asked by the prosecutor's office staff (usually the victim-witness coordinator) to complete a single page questionnaire. (Figure 1.3 shows a sample of this instrument). In addition to the witness' response, the staff person completed the information in the upper right hand box concerning the type of case, its location that date in the adjudication process and the expected length of time the witness would be at the courthouse.

Figure 1.3

Witness Survey Instrument

OFFICE USE ONLY
Case Number: _____
Charge: _____
F/M: _____
Est. hrs. in court: ____
Type of hearing: _____

Purpose: To determine how much appearing in court costs a witness.

Please complete the following sections and return to Commonwealth Attorney's receptionist or prosecutor.

Today's Date:_____ Name of Defendant:_____

A. EMPLOYMENT COSTS _____ Check here if not employed and go to B

1. Did you use leave to come here? Yes ☐ No ☐
   Annual ☐ Administrative ☐ How many hours will you use?
   Sick ☐ Other ☐ _____
2. Will you lose money because you are not working? Yes ☐ No ☐
   How much? $ _____ What is that based on? _____

B. TRANSPORTATION COSTS

1. a. Check how you got to court.
   Bus/Metro ☐ Car ☐
   Motorcycle ☐ Walked ☐
   Taxi ☐ Bike ☐
   Other ☐ _____

   b. Itemize your costs.
   Parking $ _____
   Gas $ _____
   Bus/Metro $ _____
   Taxi $ _____
   Other $ _____
2. Do you expect to be reimbursed for your transportation expenses?
   Yes ☐ No ☐

C. FOOD AND MEALS

1. Do you expect to spend money on food or drinks while you are here?
   Yes ☐ No ☐ If yes, how much? $ _____
   a. Will this be more than you usually spend? Yes ☐ No ☐
   b. How much do you usually spend for lunch and snacks? $ _____

D. SPECIAL ARRANGEMENTS

1. Did you have to make any special arrangements to come to court today?
   Yes ☐ No ☐
2. What were they? _____
3. If it cost you extra money, how much did it cost? $ _____

E. PRIOR EXPERIENCE IN COURT

1. Before this case, had you ever been in court as a witness? Yes ☐ No ☐
   a. If yes, how many times? _____
2. In this case, how many times have you:
   a. appeared as a witness? _____
   b. been unable to appear? _____
3. Has this case ever been continued? Yes ☐ No ☐
   a. If yes, how many times? _____

Organization of the Report.

Following this introduction are chapters 2 through 5. In the second chapter the results of the study are presented along with conclusions reached about the effect of continuances on the productivity of prosecutors and public defenders. The costs imposed on witnesses and victims are also discussed.

Chapter 3 contains a discussion of the location and impact of continuances on attorney effort in each of the jurisdictions and within the adjudication process. Comparisons between jurisdictions are also presented.

The detailed discussion of costs incurred by civilian witnesses and victims are discussed in Chapter 4.

Methodological issues are addressed in Chapter 5.

2. The Cost of Continuances.

Introduction.

This chapter examines the costs imposed on prosecutor and public defender agencies by continuances granted in adult felony and misdemeanor cases. The costs are fully loaded labor costs which are added onto attorney effort. They include salaries and fringe paid for attorneys, support staff and administrative staff.

Continuances have been decried as a vehicle for court delay and a denigrator of justice; but little measurement of the costs that they incur has been attempted. In this chapter we will present the results of our study on the prevalence of continuances in four jurisdictions; highlight the incremental work that is added to attorney's case-load and show the extent to which valuable office resources and dollars are assigned to this unproductive activity.

The incremental effects on workload.

In this section, we argue that continuance rates are not very informative if they are used without reference to the amount of work that is attached to the court proceedings in which they occur. In the four jurisdictions participating in this study, a continuance rate was defined to be that percent of cases scheduled for a court hearing which was continued for any reason other than for disposition. Table 2.1 shows the average continuance rates for each of the jurisdictions.

Table 2.1

Average Continuance Rates by Jurisdiction

Jurisdiction	Continuance Rate
Alexandria	14
Charlotte	16
Ventura	25
Pittsburgh	16

If one had only this much information about a jurisdiction, the conclusion drawn would be that Ventura had an abnormally high continuance rate relative to the other three jurisdictions. As we will see at the end of this chapter, Pittsburgh is the jurisdiction most adversely affected by continuances. This is because the real effects of continuances are dependent on the amount of work that they require and the cost of the labor to do the work. In Table 2.2 we can isolate the amount of attorney effort expended on cases that were continued.

Table 2.2

Hours of Attorney Effort for Continuances by Jurisdiction and Agency

Jurisdiction	Hours Worked with no Continuances	Hours Worked with Continuances	Total Workload	Percent Increase
Alexandria				
Prosecutor	9,422.9	1,406.0	10,828.9	13.0
Defense*	5,923.7	883.9	6,807.6	13.0
Charlotte				
Prosecutor	14,917.4	2,405.8	17,323.2	16.1
Defender	11,346.1	1,814.1	13,160.2	16.0
Ventura				
Prosecutor	24,886.3	5,640.0	30,528.3	22.7
Defender	11,827.2	2,831.6	14,658.8	23.9
Pittsburgh				
Prosecutor	70,761.1	10,322.3	81,083.4	14.6
Defender	34,665.4	4,265.1	38,930.5	12.3

*Assigned Counsel workload distributed proportional to prosecutor.

Based on workload created by continuances, rates can be established which more accurately reflect the impact of continuances on each of the agencies. As Table 2.2 shows, continuances add from 12 to 24 percent more work to the agency and the effect is just about equal for the prosecutor and the public defender.

If we translate this into labor costs, then we can see the budget implications of this phenomenon. Table 2.3 displays the labor costs incurred by the two agencies in each of the jurisdictions.

Table 2.3

Labor Costs of Continuances by Jurisdiction and Agency

Jurisdiction	Labor Cost (no cont.)	Continuance Costs	Total Cost
Alexandria			
Prosecutor	$381,156	$56,874	$438,031
Defense*	143,151	21,360	164,511
Charlotte			
Prosecutor	695,897	112,231	808,128
Defender	437,392	69,932	507,325
Ventura			
Prosecutor	3,375,322	765,231	4,140,553
Defender	1,320,152	316,066	1,636,218
Pittsburgh			
Prosecutor	3,192,033	465,641	3,607,073
Defender	1,281,233	157,640	1,414,588

*Assigned Counsel workload distributed proportional to prosecutor.

The cost of continuances ranges from a low of $78,000 in Alexandria to a high of almost $1.1 million in Ventura.

A natural response to tables such as the ones presented above is to compare jurisdictions to determine whether a continuance problem is more costly in one jurisdiction than another. However, the raw data should not be used for this purpose; many factors influence the numbers such as cost of salary and fringe benefits, number of support personnel, number of work days and so forth. Therefore, it is better to standardize the costs first. In Table 2.4, Alexandria is the base since it has the lowest continuance rates and all the other jurisdictional costs are adjusted to this base. In essence, this adjustment makes all jurisdictions operate under the same costs conditions as Alexandria and shows what the relative differences are.

Table 2.4

Adjusted Labor Costs for Continuances by Jurisdiction and Agency

Labor Costs

Jurisdiction	Prosecutor		Defender	
	No Cont.	Cont.	No Cont.	Cont.
Alexandria	$381,156	$56,874	$143,157	$21,354
Charlotte	377,198	60,833	141,834	22,677
Ventura	357,077	80,954	132,733	31,778
Pittsburgh	387,630	56,546	149,002	18,333

This adjustment shows that Ventura has the lowest cost base but the highest continuance cost basis. In contrast, Pittsburgh has the highest cost base but the lowest continuance costs relative to the other jurisdictions.

Since continuances cost money, decreases in their rate free up funds which could be used more productively. For example, we can estimate the number of additional attorneys who could be employed if the continuance costs were eradicated and use this as an indicator of the effect of continuances on agency productivity. Or, looking at it in another way, we can estimate the number of attorney hours expended on unproductive activities caused by continuances.

The full time equivalent number of attorneys can be estimated from the number of days available for work in each jurisdiction and agency and the hourly cost of labor in each agency. (The numbers vary because of fringe benefits, leave policies and labor costs. For example, in Alexandria, the prosecutor's labor costs were based on 228 working days and at an hourly labor rate of $40.45) Using this approach, we can estimate the number of full-time equivalent attorneys that would be available.

Table 2.5

Effect of Continuances on Full-Time Equivalent Attorneys by Jurisdiction and Agency

Jurisdiction	FTE
Alexandria	
Prosecutor	.77
Defense	.29
Charlotte	
Prosecutor	1.31
Defender	.99
Ventura	
Prosecutor	3.15
Defender	1.52
Pittsburgh	
Prosecutor	5.66
Defender	2.39

By this measure, the impact of continuances is most severe in Pittsburgh and Ventura measured by the amount of attorney effort consumed in these activities. Although it is impractical to operate within a no continuance environment, these indicators represents a base against which goals can be set. As we will see in the next chapter, continuance rates vary enormously depending on which process step is involved. Hence specific targeted areas can be attacked with an eye to reductions in rates in these areas.

Conclusions.

The overall examination of continuances show that they add not only to the workload of the agencies involved but also can be very expensive to the taxpaying community either in terms of savings or in providing better quality services. Additional attorney hours can be made available to the agencies for productive work if continuances are decreased. The lack of productivity inherent in continuances may be the biggest argument for their reduction.

The question not answered by this study, however, is what is an acceptable continuance rate? Perhaps one approach to solving this problem is to start with those jurisdictions with the lowest continuance rates, such as Alexandria and Charlotte and see to what extent these rates can be made even lower. It is clear, however, that there needs to be a clear knowledge about where continuances occur in the adjudication process and where they can be most directly affected by either policy or procedural changes. In the next chapter, we will take a more detail view of continuances by looking at how they vary in the adjudication process and with what effects.

3. Continuances and the Adjudication Process

Introduction.

In this chapter we will examine differences in continuance rates in the four jurisdictions and identify those parts of the adjudication process which are most susceptible to continuances. Our purpose in doing this is to identify those areas where continuances are most costly. This is possible because both the loci and the magnitude of delay due to continuances is identifiable. The data are presented within the context of the adjudication systems they describe since some of the majcr differences among jurisdictions may be due to the nature of these processes.

The results which are presented in tabular form for each jurisdiction start with the estimated costs of processing cases without continuances. These estimates are based on the amount of attorney effort required by each process step as obtained from logs kept by the attorneys. The costs of continuances are estimated separately. They differ from the first set of costs because they generally reflect lower levels of attorney effort. The total cost for each of the adjudication process steps is then the sum of the two. The percent of the costs in each process step which is caused by continuances is calculated. This provides insight into areas experiencing excessive costs due to delay. To give them perspective within the distribution of costs over the entire adjudication process, the percent distribution of costs by process step is compared to the percent distribution by continuances. This comparison highlights areas where the proportions are out of line.

Finally, a comparison among the jurisdictions is presented which illustrates the range of differences which exist among them and suggests the impact of court procedures or other factors.

TABLE 3.1A
DISTRIBUTION OF LABOR RATES BY PROCESS STEP AND CONTINUANCES
FOR COMMONWEALTH ATTORNEY'S OFFICE

ALEXANDRIA, VA

FISCAL YEAR 1984

Type of Hearing	Without Continuances				Continuances					Total Cost	Cont. Cost as Pct. of Total	Percent Distribution	
	No. Cases	Avg. Hours	Workload (Hours)	Process Cost All Cases *	Pct. Cont.	No. Hearings	Avg. Hours	Workload (Hours)	Continuance Cost All Cases			Process Costs	Continuance Costs
District Court NC/SD	835	1.2	1,002.0	$40,530.90	.17	142	1.4	198.7	$8,038.63	$48,569.53	16.6	10.6	14.1
Preliminary Hearing	558	2.0	1,116.0	$45,142.20	.24	134	1.7	227.7	$9,209.01	$54,351.21	16.9	11.8	16.2
Grand Jury													
(Bindover)	378	.5	189.0	$7,645.05	.00	0	.0	.0	$.00	$7,645.05	.0	2.0	.0
(Direct)	201	.7	140.7	$5,691.32	.00	0	.0	.0	$.00	$5,691.32	.0	1.5	.0
Circuit Court NC/SD	346	.6	207.6	$8,397.42	.21	73	.8	58.1	$2,351.28	$10,748.70	21.9	2.2	4.1
Motions	183	3.6	658.8	$26,648.46	.12	22	3.5	76.9	$3,108.99	$29,757.45	10.4	7.0	5.5
Bench Trial	185	4.4	814.0	$32,926.30	.20	37	3.4	125.8	$5,088.61	$38,014.91	13.4	8.6	8.9
Jury Trial	114	18.6	2,120.4	$85,770.18	.20	23	14.8	337.4	$13,649.45	$99,419.63	13.7	22.5	24.0
Plea	406	2.5	1,015.0	$41,056.75	.05	20	2.9	58.9	$2,381.29	$43,438.04	5.5	10.8	4.2
Sentencing	186	1.2	223.2	$9,028.44	.09	17	.8	13.4	$541.71	$9,570.15	5.7	2.4	1.0
Post Conviction	286	1.0	286.0	$11,568.70	.24	69	1.0	68.6	$2,776.49	$14,345.19	19.4	3.0	4.9
Misdemeanors	1,934	.9	1,650.2	$66,750.59	.14	267	.9	240.5	$9,729.00	$76,479.59	12.7	17.5	17.1
TOTAL COSTS			9,422.9	$381,156.31				1,406.0	$56,874.45	$438,030.76	13.0	100.0	100.0

* Based on hourly rate of $40.45, which includes direct and indirect labor costs (salary, fringe, and agency administrative costs).

TABLE 3.1B
DISTRIBUTION OF LABOR RATES BY PROCESS STEP AND CONTINUANCES
FOR ASSIGNED COUNSEL

ALEXANDRIA, VA

FISCAL YEAR 1984

Type of Hearing	Without Continuances				Continuances					Total Cost	Cont. Cost as Pct. of Total	Percent Distribution	
	No. Cases	Avg. Hours	Workload (Hours)	Process Cost All Cases *	Pct. Cont.	No. Hearings	Avg. Hours	Workload (Hours)	Continuance Cost All Cases *			Process Costs	Continuance Costs
District Court NC/SD	536	1.2	643.2	$14,063.18	.17	91	1.4	127.6	$3,150.60	$17,213.78	18.3	9.8	14.7
Preliminary Hearing	358	2.0	716.0	$15,654.91	.24	86	1.7	146.1	$3,607.41	$19,262.32	18.7	10.9	16.9
Grand Jury (Bindover)	243	.5	121.5	$2,656.52	.00	0	.0	.0	$.00	$2,656.52	.0	1.9	.0
(Direct)	0	.0	.0	$.00	.00	0	.0	.0	$.00	$.00	.0	.0	.0
Circuit Court NC/SD	224	.6	134.4	$2,938.58	.21	47	.8	37.6	$929.41	$3,867.99	24.0	2.1	4.4
Motions	117	3.6	421.2	$9,209.28	.12	14	3.5	49.1	$1,213.63	$10,422.92	11.6	6.4	5.7
Bench Trial	119	4.4	523.6	$11,448.20	.20	24	3.4	80.9	$1,998.52	$13,446.72	14.9	8.0	9.4
Jury Trial	73	18.6	1,357.8	$29,687.48	.20	15	14.8	216.1	$5,336.62	$35,024.10	15.2	20.7	25.0
Plea	261	2.5	652.5	$14,266.52	.05	13	2.9	37.8	$934.67	$15,201.19	6.1	10.0	4.4
Sentencing	119	1.2	142.8	$3,122.24	.09	11	.8	8.6	$211.61	$3,333.84	6.3	2.2	1.0
Post Conviction	184	1.0	184.0	$4,023.05	.24	44	1.0	44.2	$1,090.64	$5,113.69	21.3	2.8	5.1
Misdemeanors	940	1.8	1,650.2	$36,080.63	.14	130	.9	116.9	$2,887.18	$38,967.81	7.4	25.2	13.5
TOTAL COSTS			6,547.2	$143,150.59				864.9	$21,360.29	$164,510.88	13.0	100.0	100.0

* Costs have been estimated and distributed based on Commonwealth Attorney's workload.

Adjudication system costs.

Alexandria, Virginia. Alexandria has a typical bifurcated court system and a traditional accusatory process. The lower court (District Court), processes all misdemeanors and holds felony preliminary hearings. The first appearance of the defendant in this court is called NC/SD (Notation of Counsel and Set Date). A determination is made of indigency and bond is set. Almost all cases (except direct indictments) pass through this step.

After preliminary hearing, felony cases are bound over to the grand jury for indictment, (some waive). If indicted, the defendant's next hearing is a NC/SD hearing in Circuit Court which confirms representation by counsel, and sets a motions date or trial date. In Virginia, sentencing is by jury for jury trials (although the judge has the right to decrease but not increase the sentence). Sentence hearings are routinely scheduled for all other convictions or pleas.

The indigent defense system is court appointed; therefore, the cost of continuances has been estimated for these attorneys based on the proportional distribution of the prosecutor. The Commonwealth Attorney is paid by the State and the office is staffed with 11 attorneys (including the Commonwealth Attorney) and 6 support personnel. In 1983/84 the office processed 1,036 felonies, 1,718 misdemeanors and 264 misdemeanor appeals. Continuances in adult criminal cases cost the taxpayer $78,235 in FY 83. This represents 13 percent of all the labor costs expended on either prosecuting or defending adult criminal matters.

Table 3.1 shows that 13 percent of the prosecutor's adult criminal labor costs are consumed by continuances. This represents 13 percent of his workload. As Table 3.1 illustrates, the 13 percent of the total labor costs of $438,031 expended on work that results in continuances is distributed unevenly over the adjudication process. The largest amount is spent on jury trials ($13,649). However, as a proportion of the costs incurred at each process step, the highest rates of continuance costs occur at the Circuit Court NC/SD hearing (21.9 percent of all the costs of NC/SD hearings go for continuances); and at post-conviction hearings which generally are for probation and parole revocations (19.4 percent of these costs are continuance costs).

If we compare how costs are distributed over the process steps with the distribution of continuance costs, we see that even though a process step might have a substantial portion of its costs increased by continuances, relative to all costs, it may not be significant drain on expenditures. For example, 21.9 percent of the Circuit Court NC/SD costs were due to continuances. But in relation to all system costs, NC/SD's only consumed 2.2 percent of the process costs and 4.1 percent of the continuance costs. Targeting in on these distributions will show where the biggest savings in costs can be sought.

Our interest is where the distribution of continuance costs is not in line with the distribution of process costs, especially when the continuance proportions are higher than process shares. Thus, the areas of interest here are District Court NC/SD which has 14.1 percent of the continuance costs but only 10.6 percent of the process costs. Similarly, preliminary hearings have more than their expected share of continuance costs (16.2 versus 11.8 percent); so also, are Circuit Court NC/SD, and jury trials.

TABLE 3.2A
DISTRIBUTION OF LABOR RATES BY PROCESS STEP AND CONTINUANCES
FOR DISTRICT ATTORNEY'S OFFICE

26TH JUDICIAL DISTRICT, CHARLOTTE, NC

FISCAL YEAR 1984

Type of Hearing	Without Continuances				Continuances					Cont. Cost as Pct. of Total	Percent Distribution	
	No. Cases	Avg. Hrs.	Workload (Hours)	Process Cost All Cases *	Pct. Cont.	No. Hearings	Avg. Hrs.	Workload (Hours)	Continuance Cost All Cases *	Total Cost		Process Costs	Continuance Costs
District Ct. Bond/Counsel Set	4,195	.4	1,678.0	$78,278.70	.16	671	.5	335.6	$15,655.74	$93,934.44	16.7	11.2	13.9
Probable Cause	2,190	.7	1,533.0	$71,514.45	.26	569	.6	341.6	$15,937.51	$87,451.96	18.2	10.3	14.2
Grand Jury	1,976	.3	592.8	$27,654.12	.00	0	.0	.0	$.00	$27,654.12	.0	4.0	.0
Administrative Court	2,567	.9	2,310.3	$107,775.50	.15	385	.8	308.0	$14,370.07	$122,145.56	11.8	15.5	12.8
Calendar Call	1,707	1.0	1,707.0	$79,631.55	.13	222	1.1	244.1	$11,387.31	$91,018.86	12.5	11.4	10.1
Jury Trial	814	2.8	2,279.2	$106,324.68	.33	269	2.5	671.6	$31,327.81	$137,652.49	22.8	15.3	27.9
Sentencing	1,500	.8	1,200.0	$55,980.00	.01	15	1.5	22.5	$1,049.63	$57,029.63	1.8	8.0	.9
Probation/ Parole Revoc.	69	1.0	69.0	$3,218.85	.27	19	.8	14.9	$695.27	$3,914.12	17.8	.5	.6
Misdemeanors	14,274	.2	3,548.1	$165,518.87	.16	2,337	.2	467.5	$21,807.64	$187,326.50	11.6	23.8	19.4
TOTAL COSTS			14,917.4	$695,896.71				2,405.8	$112,230.97	$808,127.68	13.9	100.0	100.0

* Based on hourly rate of $46.65, which includes direct and indirect labor costs (salary, fringe, and agency administrative costs).

TABLE 3.2B
DISTRIBUTION OF LABOR RATES BY PROCESS STEP AND CONTINUANCES
FOR PUBLIC DEFENDER'S OFFICE

26TH JUDICIAL DISTRICT, CHARLOTTE, NC

FISCAL YEAR 1984

Type of Hearing	Without Continuances				Continuances					Total Cost	Cont. Cost as Pct. of Total	Percent Distribution	
	No. Cases	Avg. Hrs.	Workload (Hours)	Process Cost All Cases *	Pct. Cont.	No. Hearings	Avg. Hrs.	Workload (Hours)	Continuance Cost All Cases *			Process Costs	Continuance Costs
District Ct. Bond/Counsel Set	1,601	.9	1,440.9	$55,546.70	.16	256	1.0	256.2	$9,874.97	$65,421.66	15.1	12.7	14.1
Probable Cause	956	1.1	1,051.6	$40,539.18	.26	249	1.0	248.6	$9,581.99	$50,121.17	19.1	9.3	13.7
Grand Jury	870	.7	609.0	$23,476.95	.00	0	.0	.0	$.00	$23,476.95	.0	5.4	.0
Administrative Court	1,037	1.4	1,451.8	$55,966.89	.15	156	1.3	202.2	$7,795.39	$63,762.28	12.2	12.8	11.1
Calendar Call	686	1.8	1,234.8	$47,601.54	.13	89	1.9	169.4	$6,531.99	$54,133.53	12.1	10.9	9.3
Jury Trial	320	3.1	992.0	$38,241.60	.33	106	2.8	295.7	$11,398.46	$49,640.06	23.0	8.7	16.3
Sentencing	636	.9	572.4	$22,066.02	.01	6	1.6	10.2	$392.28	$22,458.30	1.7	5.0	.6
Probation/ Parole Revoc.	8	1.0	8.0	$308.40	.27	2	.8	1.7	$66.61	$375.01	17.8	.1	.1
Misdemeanors	4,810	.8	3,985.6	$153,644.88	.16	788	.8	630.1	$24,290.74	$177,935.62	13.7	35.1	34.7
TOTAL COSTS			11,346.1	$437,392.16				1,814.1	$69,932.44	$507,324.59	13.8	100.0	100.0

* Based on hourly rate of $38.55, which includes direct and indirect labor costs (salary, fringe, and agency administrative costs).

If there are conclusions to be drawn from this examination, it should be that the continuance problem is not focused strongly in any one part of the adjudication process with the possible exception of the District Court where retaining counsel is a large factor in causing continuances. Continuances at the District Court level (misdemeanors, NC/SD and preliminary hearings) and in jury trials account for 71 percent of the continuance costs in this jurisdiction.

Charlotte, North Carolina. The 26th Judicial District encompasses Mecklenburg County and the city of Charlotte. Supported by the Judicial Department of the State of North Carolina are the offices of the District Attorney and the Public Defender.

The District Attorney is an elected official and has jurisdiction over adult misdemeanor and felony offense, juveniles, moving violations and Uniform Recovery and Support Action. The office is supported by 21 attorneys including the District Attorney, 8 support personnel, an administrative assistant and 1 investigator.

The Public Defender's office represents 43.4 percent of the felony case-load and 33.7 percent of the misdemeanors. (Court-appointed counsel represent an additional 20 percent of the felony cases and 6.8 percent of the misdemeanors) The Public Defender's office is staffed by 25 attorneys including the public defender who is appointed by the governor, 3 investigators, 1 administrative assistant and 4 support personnel.

The adjudication process is two-tier with a probable cause-grand jury accusatory system. Felony cases enter the District Court for first appearances and probable cause hearings. If bound over, they go to the grand jury for indictment. After indictment, there is arraignment in the Superior Court, motion hearings and a jury trial or a plea; North Carolina has no constitutional provision for bench trials for felony cases. Because the judges ride circuit in the state, the prosecutor places cases on the docket and sentencing usually occurs upon conviction.

In 1983, the court processed 3,686 felonies, 11,809 misdemeanors and 606 misdemeanor appeals. Continuances in adult criminal cases cost $182.162 in FY 83. This represented 13.8 percent of all the labor costs expended on either prosecuting or defending adult criminal matters. Table 3.2 show that 13.9 percent of the prosecutor's adult criminal labor and workload costs are consumed by continuances. The public defender also expends 13.8 percent of the office's budget for labor on continuances.

When we look at how the continuances are distributed over the process steps, we see that the highest costs are incurred at the jury trial stage for the prosecutor ($31,328) while the public defender's costs are directed to misdemeanor continuances ($24,291). As a proportion of the process step costs, continuances are most costly for jury trials. They use 22.8 percent of the prosecutor's jury trial costs and 23 percent of the public defender's trial costs. When compared to the overall distribution of process step costs, the prosecutor's continuance distribution shows an imbalance occurring strongly at the jury trial stage followed by District Court first appearances and probable cause hearings. The public defender's distribution follows the same pattern.

TABLE 3.3A
DISTRIBUTION OF LABOR RATES BY PROCESS STEP AND CONTINUANCES
FOR DISTRICT ATTORNEY'S OFFICE

VENTURA COUNTY, CA

FISCAL YEAR 1984

Type of Hearing	Without Continuances				Continuances					Total Cost	Cont. Cost as Pct. of Total	Pct. Distribution	
	No. Cases	Avg. Hrs.	Workload (Hours)	Process Cost All Cases *	Pct. Cont.	No. Hearings	Avg. Hrs.	Workload (Hours)	Cont. Cost All Cases *			Process Costs	Cont. Costs
Municipal Court Arraignment	1,765	2.2	3,883.0	$526,651.29	.15	265	1.8	481.0	$65,232.94	$591,884.23	11.0	15.6	8.5
Preliminary Hearing	767	5.9	4,512.5	$612,032.64	.17	130	5.7	736.7	$99,919.10	$711,951.73	14.0	18.1	13.1
Superior Court Arraignment	564	2.0	1,146.8	$155,540.48	.14	79	2.0	160.6	$21,775.67	$177,316.15	12.3	4.6	2.8
Readiness/Pretrial	672	3.3	2,206.4	$299,254.03	.26	175	3.4	585.3	$79,385.87	$378,639.90	21.0	8.9	10.4
Readiness/ Post Trial	56	2.1	119.5	$16,203.26	.21	12	1.8	21.0	$2,844.43	$19,047.70	14.9	.5	.4
Jury Trial	100	9.2	918.3	$124,553.55	.68	68	10.8	732.1	$99,299.24	$223,852.79	44.4	3.7	13.0
Court Trial	40	4.9	195.3	$26,493.06	.24	10	9.2	88.0	$11,935.44	$38,428.50	31.1	.8	1.6
Probation/ Sentencing	690	2.2	1,506.5	$204,326.60	.17	117	2.0	228.7	$31,023.33	$235,349.92	13.2	6.1	4.1
Misdemeanors	17,219	.6	10,397.9	$1,410,267.18	.25	4,348	.6	2,608.7	$353,815.06	$1,764,082.24	20.1	41.8	46.2
TOTAL COSTS			24,886.3	$3,375,322.09				5,642.0	$765,231.08	$4,140,553.17	18.5	100.0	100.0

* Based on hourly rate of $135.63, which includes direct and indirect labor costs (salary, fringe, andd agency administrative costs).

TABLE 3.3B
DISTRIBUTION OF LABOR RATES BY PROCESS STEP AND CONTINUANCES
FOR PUBLIC DEFENDER'S OFFICE

VENTURA COUNTY, CA

FISCAL YEAR 1984

Type of Hearing	Without Continuances				Continuances					Total Cost	Cont. Cost as Pct. of Total	Pct. Distribution	
	No. Cases	Avg. Hours	Workload (Hours)	Process Cost All Cases *	Pct. Cont.	No. Hearings	Avg. Hours	Workload (Hours)	Cont. Cases All Cases *			Process Costs	Cont. Costs
Municipal Court Arraignment	505	2.0	1,010.0	$112,736.20	.15	76	1.8	137.6	$15,360.31	$128,096.51	12.0	8.5	4.9
Preliminary Hearing	465	3.5	1,627.5	$181,661.55	.17	79	5.7	446.6	$49,853.12	$231,514.67	21.5	13.8	15.8
Superior Court Arraignment	354	2.0	719.8	$80,344.08	.14	50	2.0	100.8	$11,248.17	$91,592.25	12.3	6.1	3.6
Readiness/Pretrial	419	6.2	2,597.8	$289,966.44	.26	109	3.4	364.9	$40,735.61	$330,702.04	12.3	22.0	12.9
Readiness/ Post Trial	36	3.3	118.8	$13,260.46	.21	8	1.8	13.5	$1,504.86	$14,765.32	10.2	1.0	.5
Jury Trial	63	10.3	648.9	$72,430.22	.68	43	10.8	461.2	$51,484.06	$123,914.27	41.5	5.5	16.3
Court Trial	25	2.4	60.0	$6,697.20	.24	6	9.2	55.0	$6,139.10	$12,836.30	47.8	.5	1.9
Probation/ Sentencing	432	1.5	648.0	$72,329.76	.17	73	2.0	143.2	$15,984.88	$88,314.64	18.1	5.5	5.1
Misdemeanors	8,782	.5	4,396.4	$490,726.17	.25	2,217	.5	1,108.7	$123,756.16	$614,482.33	20.1	37.2	39.2
TOTAL COSTS			11,827.2	$1,320,152.06				2,831.6	$316,066.26	$1,636,218.33	19.3	100.0	100.0

* Based on hourly rate of $111.62, which includes direct and indirect labor costs (salary, fringe, and agency administrative costs).

Ventura, California. The court systems in California are locally supported. The District Attorney is elected to represent Ventura County and the Public Defender is appointed by the County Commissioners.

The District Attorney's office is staffed by 59 attorneys including the District Attorney (40 are full-time equivalent for criminal prosecutions) and 158 nonattorneys. The Public Defender has 28 attorneys and 9 nonattorneys.

This is a two-tiered court system and the accusatory process is by a bill of information after a preliminary examination for probable cause. Felony cases are brought into the Municipal Court for arraignment and preliminary examination. If an information is filed, the case moves to Superior Court for arraignment. Following that, a readiness and motions hearing is held. It is at this hearing that pleas of guilty are taken; otherwise, cases are scheduled for trial. Readiness court is the hub of felony case activity; trials are scheduled, pleas are taken, probation and parole revocations are heard in that courtroom along with motions and other administrative matters. After readiness, the cases are individually assigned to the trial judges. Upon conviction or plea, a probation and sentence hearing is held.

In 1983/84, the prosecutor processed 1,833 felonies and 17,219 misdemeanors. The public defender represented 1,172 felonies and 8,782 misdemeanors. Continuances in adult criminal cases cost the taxpayer $1,081,297 in FY 83/84, 18.7 percent of all the labor costs expended on either prosecution or public defender services to adults.

Table 3.3 shows that 18.5 percent of the prosecutor's adult criminal labor costs are consumed by continuances. The public defender allocates 19.3 percent of the office's labor expenditures to continuances.

Table 3.3 shows that there are large differences in the continuance rates at each process step. The most costly are misdemeanors which consume 46 percent of the continuance costs. In the felony system, high continuance costs are found at preliminary hearings and jury trials. As a proportion of each step, continuances account for 44.4 percent of the prosecutor's jury trial costs and 31.1 percent of all court trial costs. The public defender incurs even higher losses at court trials, where 47.8 percent of those costs are for continuances. When balanced up against the overall distribution of costs, continuances are proportionately higher for both agencies at felony jury and court trials and misdemeanor processing. For the prosecutor, additional costs are incurred by continuances at readiness hearings while the public defender has increased costs at preliminary hearings.

TABLE 3.4A
DISTRIBUTION OF LABOR RATES BY PROCESS STEP AND CONTINUANCES
FOR DISTRICT ATTORNEY'S OFFICE

ALLEGHENY COUNTY, PA

FISCAL YEAR 1984

Type of Hearing	Without Continuances				Continuances					Total Cost	Cont. Cost as Pct. of Total	Percent Distribution	
	No. Cases	Avg. Hrs.	Workload (Hours)	Process Cost All Cases *	Pct. Cont.	No. Hearings	Avg. Hrs.	Workload (Hours)	Continuance Cost All Cases			Process Costs	Continuance Costs
Preliminary Hearing	22,051	.7	15,435.7	$696,304.43	.11	2,426	.9	2,183.0	$98,477.34	$794,781.77	12.4	21.8	21.1
Formal Arraignment	12,373	.8	9,898.4	$446,516.82	.03	371	.9	334.1	$15,069.94	$446,516.82	3.4	14.0	3.2
Pretrial Conference	7,956	.9	7,160.4	$323,005.64	.09	716	1.1	787.6	$35,530.62	$323,005.64	11.0	10.1	7.6
Hearing/Motion	7,888	1.9	14,987.2	$676,072.59	.20	1,578	2.3	3,628.5	$163,680.73	$839,753.32	19.5	21.2	35.2
Plea	5,013	1.6	8,020.8	$361,818.29	.08	401	1.8	721.9	$32,563.65	$394,381.93	8.3	11.3	7.0
Non Jury Trial	1,048	2.5	2,620.0	$118,188.20	.24	252	2.1	528.2	$23,826.74	$142,014.94	16.8	3.7	5.1
Jury Trial	516	3.4	1,754.4	$79,140.98	.33	170	3.4	579.0	$26,116.52	$105,257.51	24.8	2.5	5.6
Post Trial Admin. Court	631	3.2	2,019.2	$91,086.11	.19	120	3.4	407.6	$18,388.01	$109,474.12	16.8	2.9	3.9
Sentencing	5,910	1.5	8,865.0	$399,900.15	.15	887	1.3	1,152.5	$51,987.02	$451,887.17	11.5	12.5	11.2
TOTAL			70,761.1	$3,192,033.22				10,322.3	$465,640.58	$3,607,073.23	12.9	100.0	100.0

* Based on hourly rate of $45.11, which includes direct and indirect labor costs (salary, fringe, and agency admiistrative costs).

TABLE 3.4B
DISTRIBUTION OF LABOR RATES BY PROCESS STEP AND CONTINUANCES
FOR PUBLIC DEFENDER'S OFFICE

ALLEGHENY COUNTY, PA — FISCAL YEAR 1984

Type of Hearing	Without Continuances				Continuances					Total Cost	Cont. Cost as Pct. of Total	Percent Distribution	
	No. Cases	Avg. Hrs.	Workload (Hours)	Process Cost All Cases *	Pct. Cont.	No. Hearings	Avg. Hrs.	Workload (Hours)	Continuance Cost All Cases			Process Costs	Continuance Costs
Preliminary Hearing	7,486	1.1	8,234.6	$304,350.82	.11	823	1.3	1,070.5	$39,565.61	$343,916.42	11.5	23.8	25.1
Formal Arraignment	3,443	2.7	9,296.1	$343,583.86	.03	103	2.8	289.2	$10,689.28	$343,583.86	3.1	26.8	6.8
Pretrial Conference	3,144	1.1	3,458.4	$127,822.46	.09	283	1.3	367.8	$13,595.66	$127,822.46	10.6	10.0	8.6
Hearing/Motions	573	1.4	802.2	$29,649.31	.20	115	1.8	206.3	$7,624.11	$37,273.42	20.5	2.3	4.8
Plea	1,332	2.1	2,797.2	$103,384.51	.08	107	2.3	245.1	$9,058.45	$112,442.96	8.1	8.1	5.7
Non Jury Trial	809	3.4	2,750.6	$101,662.18	.24	194	3.0	582.5	$21,528.46	$123,190.64	17.5	7.9	13.7
Jury Trial	500	4.9	2,450.0	$90,552.00	.33	165	4.9	808.5	$29,882.16	$120,434.16	24.8	7.1	19.0
Post Trial Admin. Court	210	2.8	588.0	$21,732.48	.19	40	3.0	119.7	$4,424.11	$26,156.59	16.9	1.7	2.8
Sentencing	2,257	1.9	4,288.3	$158,495.57	.15	339	1.7	575.5	$21,271.77	$179,767.34	11.8	12.4	13.5
TOTAL			34,665.4	$1,281,233.18				4,265.1	$157,639.61	$1,414,587.86	11.1	100.0	100.0

* Based on hourly rate of $36.96, which includes direct and indirect labor costs (salary, fringe, and agency administrative costs).

Pittsburgh, Pennsylvania. Pittsburgh houses the major parts of the criminal justice system of Allegheny County. The adjudication system differs from the tradition because all criminal case are processed through a unified court system. The accusatory process is an indictment/information filed after a preliminary hearing. The grand jury is used as an investigative body. The court uses an individual docketing system after the pretrial conference.

The defendant is processed through a preliminary arraignment which sets bond and makes pretrial detention decisions. The District Attorney's office is represented here only if the arrest is a result of its investigation or involves violent crimes or other complicated cases. After preliminary arraignment, a preliminary hearing date is set. The prosecutor screens cases after preliminary hearing. If the preliminary hearing finds probable cause, an information is filed, and a formal arraignment is scheduled. After that, a pretrial conference is held, motions are heard and the case is set for plea or trial. Presentence investigations and post trial motions are made in some cases prior tc sentencing.

The District Attorney's office employs 74 attorneys including the District Attorney and 85 support personnel including investigators. In 1983/84 the office processed 24,490 defendants.

The Public Defender is appointed by the County and the office is supported by 50 attorneys and 32 support personnel. The Public Defender is not routinely present at the preliminary arraignment. Representation is provided from the preliminary hearing on. In 1983, the office represented 7,486 defendants. Continuances in adult criminal cases cost $623,281 in FY 83, 12.4 percent of all the labor costs expended on prosecuting and defending adult criminal matters.

Table 3.4 shows that 12.9 percent of the prosecutor's adult criminal labor costs are consumed by continuances. The public defender loses 11.1 percent of the office's expenditures on labor to continuances. For the District Attorney, continuances cause a loss of $465,641. The highest cost occurs at hearings and motions which is probably due in large part to the ARD hearings (a diversion program). After this stage, the next largest costs occurs at preliminary hearings and sentencing. As a percent of the costs in each process step, 24.8 percent of jury trial costs and 19.5 percent of hearing and motions costs are due to continuances. When balanced against the overall distribution of costs, a disproportionately larger amount of costs are spent on continuances at hearings and motions, jury and nonjury trials and posttrial administrative court.

For the Public Defender, the dollar value loss to productivity is $157,640. Close to $40 thousand is used by preliminary hearings, $29,883 for jury trials and $21,528 for nonjury trials. As a percent of the process step costs, continuances consume 24.8 percent of the jury trial costs and 20.5 percent of the hearings and motions. When compared to the overall expenditures by the public defender's office, continuance costs are higher than expected for preliminary hearings, hearings and motions, trials, posttrial administrative court and sentencing. In fact, only 3 out of the 9 process steps have fewer continuance costs than the distribution of process costs.

Comparative Costs.

We can see that there are sometimes wide differences between the prosecutor and public defender agencies with regard to the effects of continuances even within the same adjudication process. This is due not only to the difference in the case-load that they handle but also due to differences in the work done by these two agencies. It reaffirms the need for incorporating

indicators of workload effort into the estimating process.

If we attempt to compare the costs of continuances among jurisdictions, we would also expect to see substantial variation due to office size, wage and salary levels, the amount of attorney effort expended on cases, the volume of work and court procedures. In Table 3.5, we can summarize the gross differences among the jurisdictions by comparing the percent of the jurisdiction's total labor costs which are attributed to continuances.

Table 3.5

Comparison of Rates of Labor Costs Expended on Continuances by Jurisdiction

Jurisdiction	Continuance Labor Rate
Alexandria	13.0
Charlotte	13.8
Ventura	18.7
Pittsburgh	12.4

Unless they are displayed by process step these aggregate values have little informational value; they shed no light on the dynamics of the continuance activity in a court. For comparative purposes, they may even be misleading; as we will see, for example, in Ventura and in Pittsburgh. Table 3.6 shows the different levels of continuance rates associated with intake, accusatory, pretrial, trial and post trial processes among the jurisdictions and the total labor costs for prosecutor and public defender produced by these continuances.

Table 3.6

Continuance Rates and Labor Costs by Adjudication Process Steps and Jurisdiction

Felony Process Steps

Jurisdiction	Intake	Accus.	Pre-trial	Trial	Post-trial
Alexandria*	17	16	10	16	29
Charlotte	16	26	16	33	4
Ventura	15	17	20	58	19
Pittsburgh**	na	11	11	23	14
Continuance Costs					
Alexandria*	$11,058	$12,668	$10,786	$25,775	$23,302
Charlotte	25,531	25,520	40,085	42,726	2,204
Ventura	80,593	149,772	153,145	168,858	51,358
Pittsburgh**	na	138,043	287,812	95,915	96,071

* The assigned counsel costs were distributed on the same basis as the prosecutor's costs.

** Intake and accusatory steps are combined in this jurisdiction.

First, it is clear from the rates themselves that the jurisdictions are operating in quite different fashions when one looks inside the adjudication process. Secondly, we do not know how to interpret the raw costs unless we standardize them. Then we can look at the jurisdictions on a comparable basis. Setting Alexandria as the base, and adjusting each of the other jurisdictions to this base yields the following results shown in Table 3.7 below.

Table 3.7

Adjusted Continuance Labor Costs and Ratios by Process Step and Jurisdiction

Jurisdiction	Total	Intake	Accus.	Pre-trial	Trial	Post-trial
Alexandria	$83,589	$11,058	$12,668	$10,786	$25,775	$23,302
Charlotte	72,431	13,591	13,585	21,338	22,744	1,173
Ventura	51,688	6,900	12,823	13,111	14,457	4,397
Pittsburgh	96,972	*	21,666	45,173	15,054	15,079
Alexandria	1.0	1.0	1.0	1.0	1.0	1.0
Charlotte	0.9	1.2	1.1	2.0	0.9	0.1
Ventura	0.6	0.6	1.0	1.2	0.6	0.2
Pittsburgh	1.2	*	1.7	4.2	0.6	0.6

* Intake and accusatory steps are combined for Pittsburgh.

With this adjustment, the effects of workload are held constant and we are measuring differences due to continuances themselves. Relative to Alexandria, Ventura has the lowest continuance costs at intake, possibly due to more emphasis on screening and case review prior to complaint issuance.

In the accusatory step, all the jurisdictions have about the same level of costs except Pittsburgh which is substantially higher. Since this represents the first opportunity for prosecutor and public defender to be in court, this may explain the higher rates of continuances.

Pretrial shows a wide range with Alexandria recording costs the lowest costs and Pittsburgh a very high $45,000 bill. It is difficult to infer much from this comparison since each jurisdiction has structured their procedures in this area differently. At the most, the data might suggest that court procedures and structure may be a factor here.

In trials, Alexandria and Charlotte pair up for the high costs, Ventura and Pittsburgh with the low. Post trial continuance costs again show a big variation. The low post trial costs in Charlotte are most likely because presentence investigations are used on an exceptional, rather then routine, basis.

Summary.

This analysis of continuances and the costs of continuances in the adjudication process demonstrates the dynamics of the adjudication system. If one is to understand the phenomenon of court delay or attempt to reduce it by taking a tougher stance against continuances, this exercise would be very helpful. Knowing where the costs are incurred and which areas to target first may produce savings that otherwise might have been missed. Not all offices are the same, therefore it would not be sensible to assume that the continuance problem acts is the same manner. The above comparison very clearly points out the differences in the costs and where they occur. We have seen the weakness in using continuance rates that explain little about the

effect of continuances on loss of productivity and production of high costs To be an effective measure, they should be used in conjunction with the level of effort required by the court processing step. With this use, they become powerful management and budgeting tools.

4. The Cost of Being a Witness

Introduction.

This chapter will examine the costs incurred by witnesses each time they have to come to court to testify. (This study does not include professional witnesses such as police officers and store security personnel.) It is assumed that each court appearance produces essentially the same set of costs for the witnesses regardless of whether the hearing was continued. To obtain these costs, witnesses in Alexandria, Charlotte and Ventura were asked to fill out survey forms indicating what they expected their costs to be for that day. Table 4.1 shows the number of witnesses surveyed at each site.

Table 4.1

Number of Witnesses Surveyed by Type of Crime

	Alexandria	Charlotte	Ventura
No. of Witnesses	100	61	35
Pct. Felony	28%	0%	50%
Pct. Misdemeanor	63	100	50
Pct. Misdemeanor Appeal	9	0	na

The witnesses were asked to record their expected costs in four categories: (1) employment, (2) transportation, (3) food, and (4) special arrangements. These were then added together to determine the total cost to the witness. Transportation costs were not included in the total cost if the witness expected to be reimbursed for those expenses, and the amount normally spent on food was deducted from the food costs before being added to the total. Table 4.2 show the time and money spent by witnesses in each site. In addition to their expenses, the witnesses were also asked to indicate their prior experience in court. This included previous court appearances related to this case as well as other cases.

Table 4.2

Time and Money Spent by Witnesses

	Alexandria	Charlotte	Ventura
Avg. Hours in Court	3	4	4
Avg. Total Cost	$32.86	$27.06	$13.49

Employment.

The first problem faced by a witness is taking time off from work in order to go to court. Table 4.3 shows how this was accomplished, and what the cost was to the witness in terms of money or hours of leave (annual, sick, or administrative).

Table 4.3

Employment Costs to Witnesses

	Alexandria	Charlotte	Ventura
Pct. of Witnesses Using Leave	38%	43%	27%
Average Hours Used	5	6	5
Pct. of Witnesses Not Using Leave	44%	51%	57%
Pct. of Witnesses Unemployed	18%	7%	17%
Pct. of Witnesses Losing Money by Not Working	37%	35%	30%
Average Amount Lost	$85.01	$72.27	$44.99

The number of witnesses losing money by not working remains fairly constant over the three sites, ranging from 30% in Ventura to 37% in Alexandria. The amount of money lost, however, varies. The average cost in Alexandria is almost twice as much as the average cost in Ventura.

Transportation

Table 4.4 shows the methods used tc get to court once the witnesses have made the time.

Table 4.4

Type of Transportation Used by Witnesses

	Alexandria	Charlotte	Ventura
Bus/Subway	4%	13%	0%
Taxi	5	0	0
Car	79	82	89
Walked	7	2	3
Bicycle	0	0	3
Other	5	3	6

The "Other" category usually included either riding to court with someone else, which involved no expense to the witness, or a plane flight for those who were not in the area at the time of the court hearing. This obviously had a much greater cost, since the witnesses not only had to pay for the flight, but sometimes had tc rent a car to get to the courthouse.

Table 4.5

Average Transportation Costs for Witnesses

	Alexandria	Charlotte	Ventura
Parking	$2.59	$.82	$.00
Gas	2.73	3.62	6.82
Bus/Subway	1.33	1.20	.00
Taxi	17.25	.00	.00
Other	181.67	.00	47.25
Pct. of Witnesses Expecting Reimbursement	8%	12%	32%

The average costs in Table 4.5 include only those witnesses who incurred such expenses. Therefore, the average cost for "Other" transportation would not include car pools in which the witness bore no expense. Not only do the average costs for parking and gas vary between sites, but the real cost to the witness also differs. Almost one third of the witnesses in Ventura expected to be reimbursed for their transportation costs, while only 8% of Alexandria's witnesses anticipated being relieved of this expense.

Meals.

When the witnesses are at the courthouse all day, or have to be there at lunch time, an additional expense can be involved.

Table 4.6

Food Costs for Witnesses

	Alexandria	Charlotte	Ventura
Pct. of Witnesses Paying for Food	27%	67%	53%
Pct. Paying More Than Usual	12	10	24
Avg. Cost of Food	$4.98	$2.14	$6.97

Although the percentage of witnesses spending money on food ranges from 27% in Alexandria to 67% in Charlotte, most of the people did not spend any more money on lunch than they normally would (a high of 24% in Ventura). Therefore, money spent on food was often not counted in the total cost of going to court.

Special Arrangements.

In addition to employment, transportation, and food, many people have to make additional arrangements in order to be able to come to court. As table 4.7 shows, almost half of the witnesses reported having to make special arrangements in addition to those already reported.

Table 4.7

Special Arrangements for Witnesses

	Alexandria	Charlotte	Ventura
Pct. of Witnesses Making Special Arrangements	48%	71%	47%
Average Cost	$7.23	$2.50	$1.38

Although some people were able to report how much these arrangements cost them, most were not. In Alexandria, only 28% of the witnesses who reported making special arrangements were able to assign a dollar value to them. For Charlotte and Ventura the percentage was even lower (17% and 19% respectively). These other preparations included such things as rearranging their work schedule, postponing or canceling appointments, and finding someone to watch their children. These are inconveniences which we are unable to measure in monetary terms.

Prior Experience in Court.

The average witness in this survey had never been in court before this case. This was their first appearance in this case and the first time they had been requested to appear.

Table 4.8

Experience of Witnesses

	Alexandria	Charlotte	Ventura
Pct. That Had Been Witnesses Before	38%	47%	29%
Avg. No. of Appearances	2	5	2
Avg. No. of Appearances in This Case	1	1	1
Avg. No. of Times Unable to Appear	0	0	0
Pct. of Cases Continued	24%	46%	15%
Avg. No. of Continuances	1	1	3

The most experienced witnesses were in Charlotte, where 47% of those surveyed had been in court before this case, and they had an average of 5 court appearances. Charlotte also reported the highest percentage of witnesses encountering a continuance in the present case (46%). Even though Ventura had the lowest percentage (15%), the average number of continuances was greater.

Summary.

The salient feature of this examination of the costs of court appearances is how low they are and how few witnesses actually incur substantial losses. Twenty percent of all the witnesses reported that they incurred no costs; for the remainder, the costs were mostly employment related. In the tables below, the number of people affected and the pattern of costs is displayed as it is incurred in each of these areas.

Table 4.9

Distribution of People Affected

Category	Number Responding	Number Affected	Percent Affected
Employment	156	55	35%
Transportation*	142	132	93%
Food	192	64	33%
Special Arrangements	191	23	12%

* Does not include "Other" transportation.

Table 4.10

Distribution of Witness Costs

	Number Responding	Total Cost	Average Cost
Employment	49	$3,683.37	$75.17
Transportation*	132	686.03	5.20
Food	63	290.76	4.62
Special Arrangements	23	850.20	36.97

* Does not include "Other" transportation.

It appears that where costs are incurred due to loss of work, it is more likely to be due to the policy of the employer or the fact that the witness is self-employed. A more uniform policy by employers, one which allows for court appearances, would greatly reduce the financial burden on the witnesses. If the county or judicial district were to reimburse witnesses for costs, a number of options could be considered in light of these findings. Simplest but most expensive, would be to reimburse average costs. If reimbursement was provided for losses incurred by the self-employed, then only 30 to 35 percent of the witnesses would be in this category. Transportation and food costs are minimal. The transportation could be reduced even more by the availability of free parking such as is provided in Ventura. Since the civilian witness is an essential part of the adjudication process, more serious attention should be given to the costs incurred by these witnesses. Public agencies should work to reduce witness losses.

5. Alternative Costing Methodologies

Introduction.

The basic purpose of this chapter is to examine two approaches to modeling the adjudication system and determine which is best suited as a theoretical model for estimating court continuances. Each of these choices are legitimate in their own right and have been applied to the analysis of criminal justice issues and problems. However, they are based on different sets of assumptions, have different data requirements, and yield answers to different sets of questions. The primary task facing the researcher is to adopt that approach which is most suited to the study and which is most compatible with the requirements of the methodology. The two approaches examined are production functions and Markov processes.

Theory of Production.

There has been much interest in recent years in estimating cost and production functions for a multitude of organizations, profit and nonprofit alike(e.g. Schmidt and Witte, 1984; Darrough and Heineke, 1978; Caves and Christensen, 1980; and Ocwing and Holtmann, 1983). Before such estimation is possible it is necessary to understand the intuition behind the theory of production and cost.

The first step in the procedure is to define what the economist means by the term production function. A production function defines the physical relationship between inputs and outputs in a production process. More specifically, a production function indicates the maximum amount of output that can be obtained from different amounts of the inputs land, labor and capital. Land is defined as any natural resources that are used in a production process. The input(or factor of production) labor consists of the physical and mental contributions of people to the production of a particular good or service. Capital consists of man-made factors of production such as machines, buildings and the like.

Analytically, the production function for a good or service can be represented in general mathematical notation as follows.

1) $Q = f(X_1, X_2, X_3, \ldots, X_n, \text{given a particular technology})$

This says that the output (Q) of the good or service in question is a function of the amounts of the inputs X_1, X_2, through X_n, given the technology available. Thus, the amount of output will be determined by the amounts of the inputs as well as the available technology.

At this point it is important to distinguish between fixed and variable inputs as well as between the short and long run. Fixed inputs are by definition fixed and do not vary as the firm's output changes. Examples in the economist's traditional profit-maximizing framework would include such items as the firm's plant and equipment as well as certain types of labor with special skills. Fixed inputs in a court system are the courtrooms, judges, and bailiffs. Variable inputs, on the other hand do change with the output level of the firm. Examples of variable inputs would include unskilled labor, electricity and materials that are needed for the particular production process in question. In prosecution, variable inputs might include attorney effort, case complexity, and dispositional route.

Acknowledging these different types of inputs, we can differentiate between the long run and the short run. In the short run at least one input is fixed while in the long run all resources are variable. Note that there is no calendar length that differentiates the short from the long run. Economists generally assume that the most important factor that separates the long from the short run is the firm's plant(e.g. its buildings and machines). Thus, a street vender of apples, whose main plant is probably nothing more than something to carry apples in will have a much shorter short run than an electric utility. In the latter case, it takes years to expand the plant. In the short run, courtrooms and judges probably are fixed while in the long term both would be variable.

It is important to note that as long as at least one input is fixed, the system is operating in what the economist refers to as the short run and the relevant production function is the short run production function. This is most generally the case in the court system where judges and courtrooms place an upper bound on the overall capacity of the system to produce dispositions.

On the other hand, when all factors are allowed to vary, including the number of judges and courts, we are operating in the long run. To the non economist the distinction between the long and short run may seem insignificant. However, in analyzing production and cost functions, different factors impact the shapes of the short-run and long-run functions. Moreover, the "run" we are in impacts the types of questions that can be asked by one examining the cost or production relationships. More will be said about this later.

Let's examine the short-run production function of a typical profit-maximizing firm that hires two inputs, capital and labor--both assumed to be homogeneous. The conventional assumptions behind the model of production and cost theory include profit-maximization, homogeneous inputs, a single output and competition on the input side of the market. In the analysis of the short-run production and cost below it is also assumed that one of the inputs is fixed--in the example below, capital. In the short run, the firm in economic theory maximizes it profits by changing the utilization of its variable resources so that it produces the output where profits

are maximized. The analogy to the courts is that dispositions may be maximized by changes in attorney utilization. An understanding of this simple model will give insights into the expected shape of the production function and cost function which will help in setting up the empirical model that is relevant if an actual cost function was to be estimated.

The concept of the production function has been defined above. Another and related concept is that of the marginal product. The marginal product of an input is defined as the extra output associated with using one more unit of the variable input(in this example, labor), while all other inputs are held constant. In the case of the court system the marginal product of a prosecutor would be the additional dispositions gained from plea bargaining, pre-trial diversion, or more selective screening, holding constant the number of judges, courts, computers ,etc.

Also important to the discussion of short-run production and cost is the concept of the law of diminishing marginal productivity. This is not a law that is arrived at by deductive reasoning. Instead it is a phenomenon that appears to characterize most, if not all production processes in the short run. This law states that as extra units of the variable input are added to the production process, holding other factors of production constant, eventually the increments to output will get smaller. What this law says is that there is some physical relationship between inputs in the production process that yields the largest increment to output when a variable input is added to a production process.

Take an example of a jurisdiction where the variable input is attorneys (prosecutor and public defenders) and the output is case dispositions. If the jurisdiction has too few attorneys, increasing their numbers will increase the number of dispositions at an increasing rate. This is because the fixed input, namely court capacity, is being utilized inefficiently in an engineering sense. However, there would come a point where adding more attorneys would not increase dispositions at all and one could easily conceive of dispositions decreasing with increased time for trials.

If there was small number of attorneys in relation to the fixed factors, these other factors are likely to be underutilized. If the number of lawyers increased, the fixed factors could be more effectively utilized by allowing specialization to take place among the different lawyers as well as more effective utilization of the previously inefficiently utilized fixed resources noted above.

Let's illustrate the law of diminishing marginal productivity graphically in Figure 5.1. Units of the variable input labor are measured on the horizontal axis while marginal product is measured on the vertical axis. The law of diminishing returns says that the marginal product curve shown in the graph will eventually decline (i.e. have a negative slope). In the example, there are increasing returns associated with hiring each of the first three laborers and the marginal product declines after the fourth. Taking the information about the law of diminishing returns, we can now tie the production and cost functions together. Keep in mind the shape of the marginal product curve just noted since it will give insights into the predicted shapes of the firm's short-run cost curves that would be expected from an empirical analysis of costs. Or, in the example of the courts, such an understanding will be necessary if cost functions for the court system are to be obtained. The tie between production and costs is discussed in the next section.

Figure 5.1

Marginal Product Curve

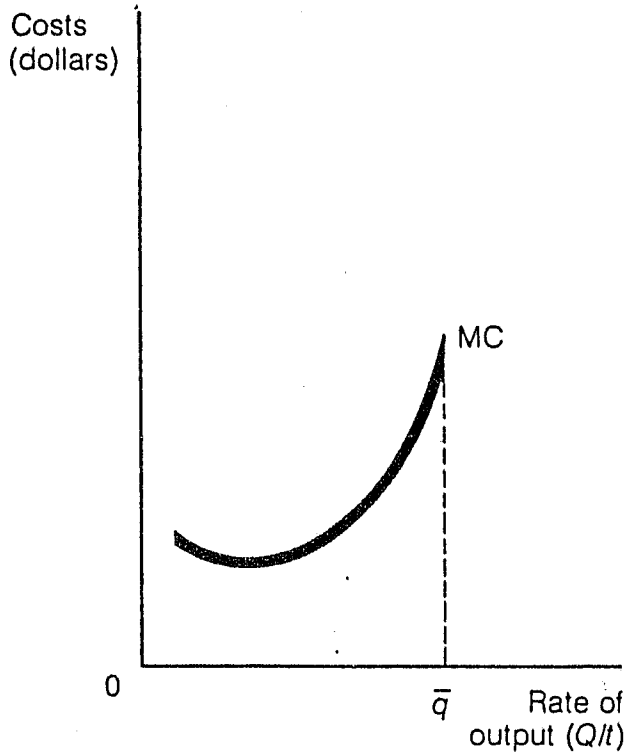
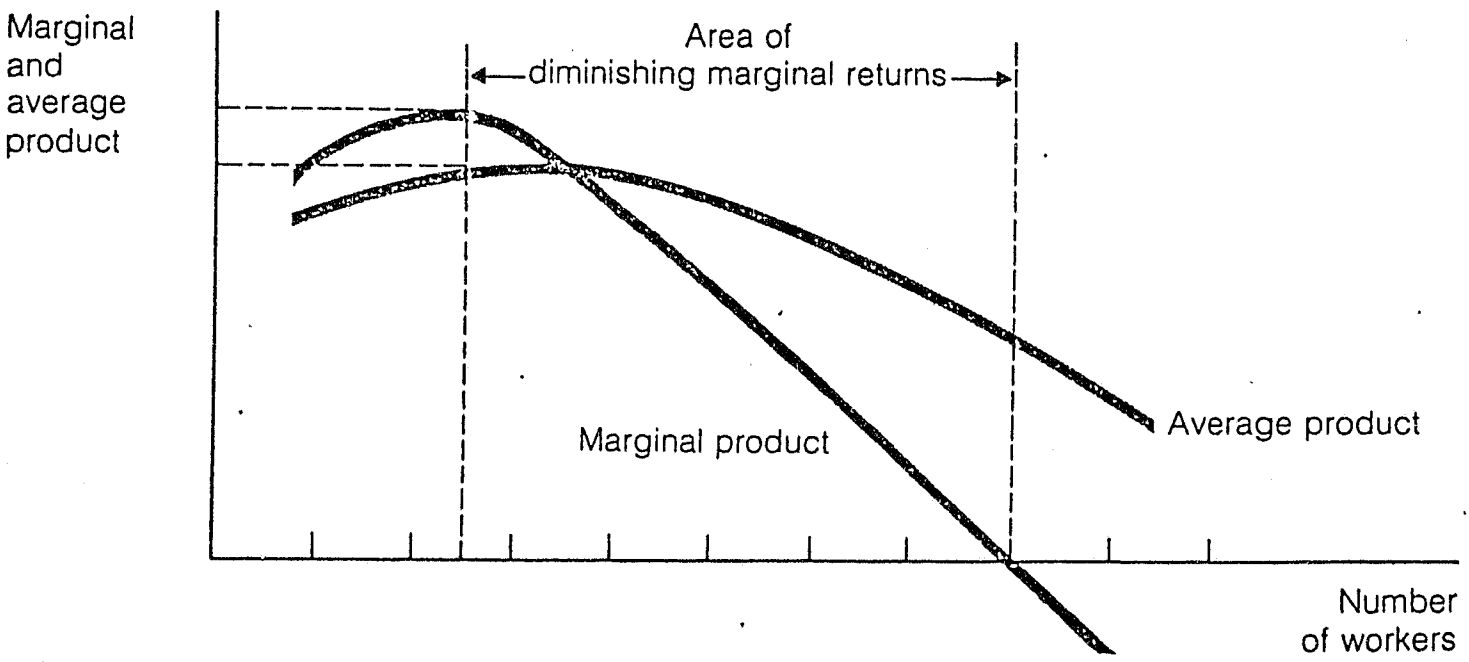


Figure 5.2

Short Run Marginal Cost Curve



Cost Theory.

An alternative method of looking at the firm's production relationships is through its cost function. To the economist, a short-run total cost function indicates the minimum cost associated with producing a particular level of output given that the capital stock is fixed.

Short-run total cost (SRTC) is expressed as the sum of total fixed cost (TFC) and total variable cost(TVC).

$$2)\ SRTC = TFC + TVC$$

The above formula can be rewritten in the following manner.

$$3)\ SRTC = pk * K + g(pl, K, Q)$$

where pk refers to the price of capital(the fixed factor in the example); K, the units of fixed capital stock; pl, the price of labor(the variable input in the example) and Q the output of the good produced. g refers to an unspecified relationship illustrating that TVC is a function of pl, K and Q. Recalling from equation 1 that output (Q) is a function of the variable input labor, it should not be surprising that the short-run total variable costs are a function of the price of the labor and the level of output.

Often economists will use average cost functions in their analyses. The short-run average total cost (SRAC) function is derived by dividing short-run total costs by the output.

$$4)\ SRTC/Q = SRAC = (pk * K)/Q + g(pl, K, Q)/Q$$

Another important cost concept is that of the marginal cost. Marginal cost (MC) is a measure of the extra cost associated with producing one more unit of the output in question. The law of diminishing returns suggests that if we graph the short-run marginal cost curve that it will be U-shaped(see Figure 5.2). Recall that the marginal product of labor indicates the extra output per extra one unit of labor. If we only desire to calculate the marginal cost of the extra unit of output in terms of the extra labor required, it is apparent that the marginal cost is nothing more than the reciprocal of the marginal product of labor. Recall that the shape of the MPl curve in Figure 5.1 is an inverted U. Since the marginal cost is the reciprocal of the marginal product it should not be surprising that the marginal cost curve is U-shaped.

Figure 5.3

Short Run Average Cost Curve

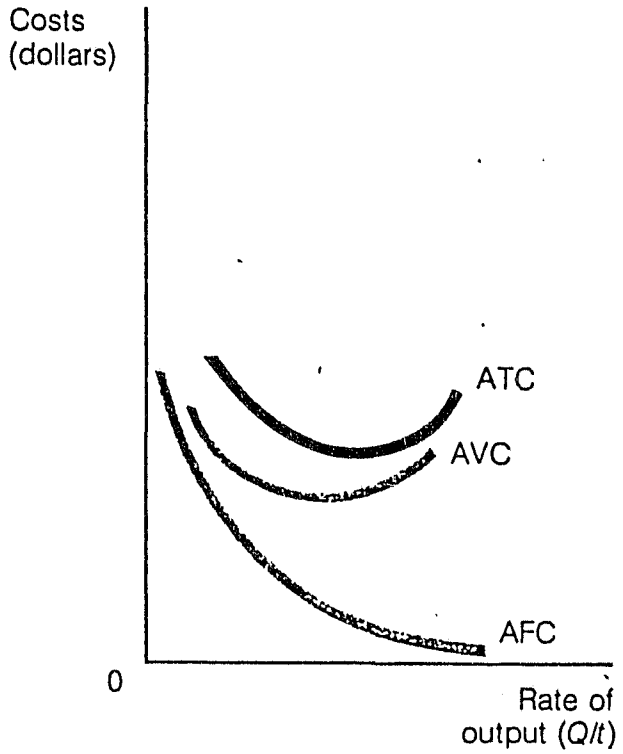
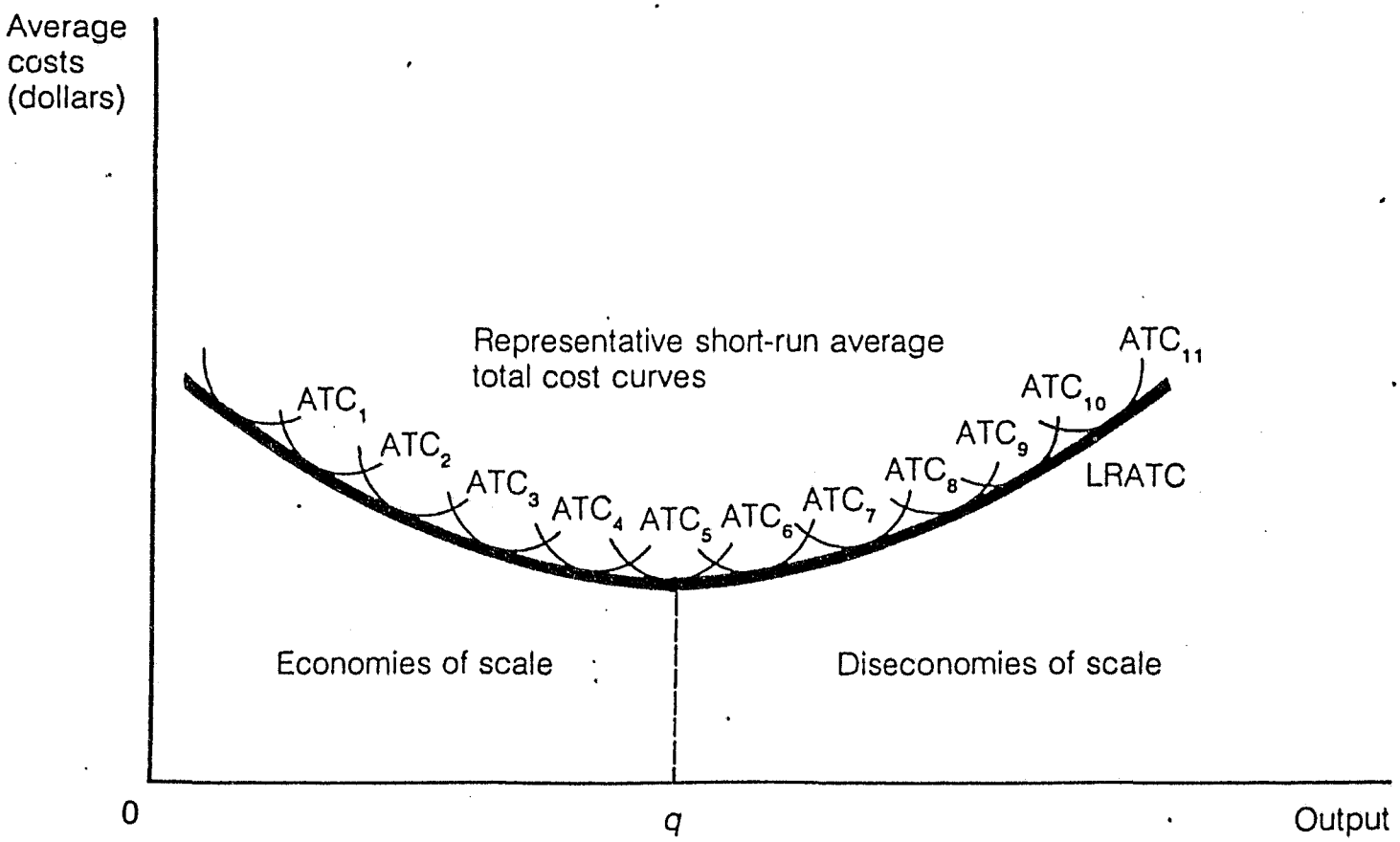


Figure 5.4

Long Run Average Cost Curve



In the example above it is assumed that labor is the only variable input and the firm pays a constant wage(i.e. the firm is a perfect competitor in the input market). Let's rationalize the U-shaped nature of the short run average cost curves in Figure 5.3. When there are increasing returns associated with hiring extra laborers(i.e. extra laborers are adding more to output), the extra cost(marginal cost) of the extra unit of output will fall. But after the law of diminishing returns takes hold the marginal cost will rise because each extra laborer is adding less and less to output but is being paid the same constant wage as previous workers.

Since the marginal cost curve is U-shaped, the average variable and average total cost curves must have the same U-shape. The curves shown in Figure 5.3 represent the shapes of the short-run cost curves facing the typical firm in economic analysis. They suggest that the marginal and average costs will decline over the lower ranges of output, reach a minimum and then rise thereafter.

It should be emphasized that we have to this point been dealing with short-run costs--some factor of production has been held constant. As a result and in the presence of the law of diminishing marginal productivity, the short-run average cost curves were U-shaped. If the long-run costs are what we want to examine, all factors must be variable. So, for instance, the firm might double all of its inputs. Note that since all factors have increased, the law of diminishing returns is irrelevant. The traditional long-run average cost curve is shown in figure 5.4. The long run average cost curve shows the minimum cost per unit associated with producing a particular level of output given that the firm can change its plant to the optimal size as well as changing its employment of labor.

Like the short-run average cost curves, the long-run average cost curve (LRAC) is U-shaped, but for a different reason. The shape of the LRAC arises from economies and diseconomies of scale. For instance, if the firm doubles all of its inputs and this results in the costs per unit falling, this is referred to as economies of scale. Larger operations may allow for specialization of labor as well as different techniques of production that are not possible with a small plant size. The obvious example is an assembly line. There are few economies of scale associated with the court system. In a sense the firm reaches an optimum when the single court room is utilized fully. Each increment of dispositional throughput requires the addition of an additional courtroom.

Short Run vs. Long Run Costs

Let's illustrate some questions that might be of relevance in the context of an analysis of the short-run costs of the court system. That is, what are some questions that the estimation of short-run cost curves might provide answers for.

1. What is the impact of a continuance or series of continuances on the cost of cases in the court system?
2. What disposition level minimizes the cost in terms of attorney effort.
3. How should cases be allocated to particular dispositional routes through the court system in order to minimize cost of prosecution?

4. What is the impact of attorney labor costs on the unit cost of the disposition.
5. What are the costs associated with different process steps where dispositions may occur?

Short-run cost functions estimated for the court system could be used to project costs under different sets of assumptions about input prices. Such information would be of great use to policy makers in their preparation of budgets. Short-run cost functions would also be of interest to policy makers who are trying to project the impact of input cost inflation on the costs of running the court system.

The types of questions relevant to long-run analyses involve those relating to the optimal scale of operation and the least cost technology associated with providing a particular level of output in the court system. Examples of several questions of relevance follow.

1. How many judges would be needed to minimize the average cost of a case disposition in the court system?
2. How much computerization of the court process is optimal(i.e. what is the least-cost technology?)?
3. In terms of the physical plant, what is the optimal size of the capital stock in the court system.

Estimation of Cost Functions

In order to estimate cost functions, several questions must first be answered. First, what is the productive unit in question? In the court system, for our purposes it is generally the local jurisdiction. Second, what is the primary goal of the productive unit? The traditional cost model of the economist is built on the assumption that profit-maximization is the key goal. Since the court system is non profit, profit maximization is not a plausible goal. However, estimated cost functions still will provide important behavioral relationships that could be used by policy makers interested in achieving an efficient(in the economic sense)judicial system. Third, what is the output being produced by the system? If it is the disposition of cases then these costs will be different from those that involve sentencing or even appeals. For our purposes here, we will define output as the disposition of a case including the sentencing process step.

Functional form. Having addressed the above issues, questions must now be asked regarding the mathematical function that will be used to estimate the costs of the court system. When estimating short-run cost functions, economists usually select a functional form that imposes diminishing returns as a constraint. Another issue about the function to be used whether for long or short run functions, concerns returns to scale. That is, if all of the inputs are doubled, tripled, etc., will the cost per-unit fall, rise or remain unchanged. Mathematical functional forms exist that will allow for any of these possibilities. In addition, another issue in the selection of the mathematical form that the researcher will use to estimate involves what the economist refers to as the elasticity of substitution between the inputs in the production process in question. To be precise the elasticity of substitution of capital for labor can be expressed by the following formula for our two input case, capital(K) and labor(L).

5) Elasticity of substitution kl $= \%\ (K/L)/\%\ (pk/pl)$

The elasticity of substitution of capital for labor, an output of the estimated cost function, would provide the policy maker with an estimate of the ease with which capital can be substituted for labor when there is a change in the relative price of labor. If the official running an agency is under a budget constraint, information on the ease of substitution between the different factors of production is critical.

Clearly, we see some substitution taking place between attorneys and para-legals, judges and lay magistrates, computers and clerks, and innovative uses of capital to increase throughput. It is however, a very labor intensive process since a judge, prosecutor, and defender will generally have to be involved. The constraints placed on the functional form would be developed on the basis of our knowledge of how the court system operates.

Data requirements. There are two types of analysis used in estimating cost functions. One is called cross-sectional analysis. Here, observations would be analyzed from many jurisdictions at a point in time. The other type of analysis is called time-series analysis. In this case, data observations would be analyzed for the same jurisdiction over time. If there is substantial variation in the capital stock across jurisdictions(in cross sections) or in the same jurisdiction over time(in time series), the estimated cost function could be interpreted as a long run cost function.

When conducting any statistical analysis, it is necessary for there to be enough data observations so that sufficient degrees of freedom are available to estimate the cost relationship. Since a budget cycle takes a year, that would generally be the accepted period for analysis. In this case. the observations are insufficient for estimating a time series. If a cross section approach is utilized there are only 4 observations. All in all, the data available is insufficient to estimate the cost function.

Variables in the Cost equation. Basic inputs into a cost equation would include adequate measures of cost, the dependent variable as well as data on key explanatory variables such as type of disposition, prices of all inputs (e.g. attorney costs), and qualitative characteristics of each of the systems. Qualitative aspects could include the case-mix in the jurisdiction, the incidence of continuances, the speed of dispositions, the type of dispositions desired, qualitative differences .We can avoid the multiproduct problem by assuming a single output but of different quality where quality is controlled on the right side of the equation.

Having information on the above variables, cost functions can be estimated if there is sufficient variation in the explanatory variables. Moreover, since a cost function assumes a particular technology, the observations must be chosen from jurisdictions that employ a similar technology in their court systems.

Summary and Conclusions

In the first part of this section, the basic theory of production was discussed. This provided insights into the shape of the marginal product curve. Then the shape of the marginal product curve was tied to the shape of the marginal cost curve. These concepts provide the intuition behind the predicted shapes of the cost curves that the researcher should expect to find in an empirical study of costs of the court system. After developing the intuition behind the

economist's concept of cost curves, some basic issues in the empirical estimation of cost curves were discussed. The key result of that section was the finding that although estimated cost functions could be of great use to policy makers in the judicial system, the data collected for the current grant simply has too few observations to provide statistical estimates of the costs of continuances.

Markov Chains

In contrast to the production function approach which yields direct estimates of the determinants of the costs, one may also approach the court system as probabilistic in nature. The adjudication system can be treated as a discrete time process which is random in nature. A flow chart of the adjudication system is shown in Figure 5.5 In the flow chart the possible paths that can be followed by cases as they move through the court system are shown. In what follows, it will be shown that if the probability of moving from one point to another in the process is known, it is possible to estimate the probabilities of being in a particular state(i.e. at different locations in the process) in the future, given that you started at a particular point in the court system.

In the first section, the intuition underlying random processes and Markov processes in particular will be examined in the context of the court system. In the second section, the data requirements for modeling the court system via a Markov chain model are indicated. The final section will outline the types of questions that the system can answer and show the underlying relationship to the estimation of continuance costs.

Markov Processes

A random process is one which evolves over time in a way that is not completely predictable. If we assume that the court system is such a random process, then it also means that the path a case takes through the system can not be determined with absolute certainty.

One important assumption of the Markov approach is that the process in question is treated as a discrete time process. Consider the "typical" offender traversing the court system. Each movement through the system, even if it is only a continuance, is viewed as being measured discretely(i.e. as one period). When entering the court system there is no set(with certainty) pattern followed by every defendant. In fact, the defendant isn't likely to know, with certainty, the stage he or she will be in next. It is possible, for instance, for the defendant to be in the same stage at the end of the period through a continuance. Also, all of the possibilities are not equally likely; and where the defendant goes next is dependent on his or her current place in the process.

Suppose that we specify a particular time interval in the future and ask what stage the defendant will be in at that time. We can say that this future state is given by a random variable which can take the from one to as many process stages within the system (i.e. first appearance, preliminary hearing ...) according to some probability distribution. This is true for any time interval. Thus, if we desire to describe the future of the whole process, we can say that it is described by a sequence of random variables $\{X_1, X_2, X_3, \ldots X_n\}$ where X is interpreted as the uncertain assignment that the defendant will have during the nth period(stage).

Since the court process is being described by a sequence of random variables, a probability distribution of the $\{X_1, X_2, \ldots, X_n\}$ must be assigned to each X_i. However, where the defendant is located next is a function of the previous assignment(i.e. previous location in the court process). Employing the Markov process makes the problem of assigning probabilities for moving from one state to another more manageable. One of the key assumptions of a Markov process is that where a person is assigned next is a function only of his or her present assignment(or state) in the court system. The Markov chain involves a discrete time stochastic process where each state depends on the previous state and affects only the next state in the court process. The attractive feature about Markov chains is that it requires joint or conditional distributions be developed for only two adjoining random variables at a time!

Suppose that X_o represents a defendant's initial state (which we call Intake-state 1 in the flow chart of the court system) and we want to know about his or her next assignment. What is needed is the probability distribution over the assignments that are possible from the Intake stage. At this point, the case could be dropped(state 2 = reject) or the person could be arraigned in the district court(state 3). Take another example. If the defendant is in period 0 being arraigned in district court(state 3), in period 1 there are four different possibilities for assignment: grand jury(state 5), arraignment in superior court(state 6), preliminary hearing(state 4), or dismissal(state 13). Of course, there is a separate set of probabilities when the initial starting point is somewhere else in the system.

We define a transition as moving from one state to another. The probabilities associated with the possible transitions can be conveniently recorded in matrix form. The matrix denoting the transitions for changes of state between periods 0 and 1 is called a one-step transition matrix. This matrix for the court system is shown in Figure 5.6. Note that in the flow chart each of the stages is given a number. In the matrix, the first subscript for each row designates the stage the defendant is in period 0 based on the number assigned in the flow chart, while the second indicates a stage in which the defendant could be in period 1 given that he or she started in the state indicated by that row. For example, suppose that the person in period 0 is just entering the system at the intake stage(stage 1 in the flow chart). The probabilities shown in row 1 in the transition matrix represent the probabilities of moving from stage 1 in period 0 to another stage in period 1. As it turns out, in the court example the probabilities in row 1 are all zero except for two. The case could be rejected(move to 2) or the defendant could be arraigned in district court(move to 3). So p12 represents the probability that a person who starts in state 1(intake) in period 0 will go to state 2(dismissal) and p13 represents the probability that a person in state 1 in period 0 is arraigned in district court(state 3) in period 1. Again, since no other transitions are possible the rest of the p's in row 1 are 0. Obviously, though, the probabilities of being in a particular state in period 1 will depend on the state the person was in in period 0.

Each row is a probability distribution for the random event X_1(the state in period 1) given that the person started in period 0 from the state designated by the row in question.

Suppose that instead of wanting the transition probabilities for period 1, we want the probabilities associated with a defendant being in a particular state in period 2 given that he or she was in a particular state in period 0. It is now convenient to make the second assumption underlying the Markov process. This assumption is that the one-step transition probabilities are stable. For example, the probability of moving from the arraign- ment in district court(stage 3) to a preliminary hearing(stage 4) is the same in period 2(and for that matter all future periods)

as in period 1. Given that assumption the two-step transition matrix is obtained by squaring the original P matrix. The p(2)ij in the matrix refers to the probability of an individual who was in state i in period 0 being in state j in period 2.

Figure 5.5

Typical Court System Flow Chart

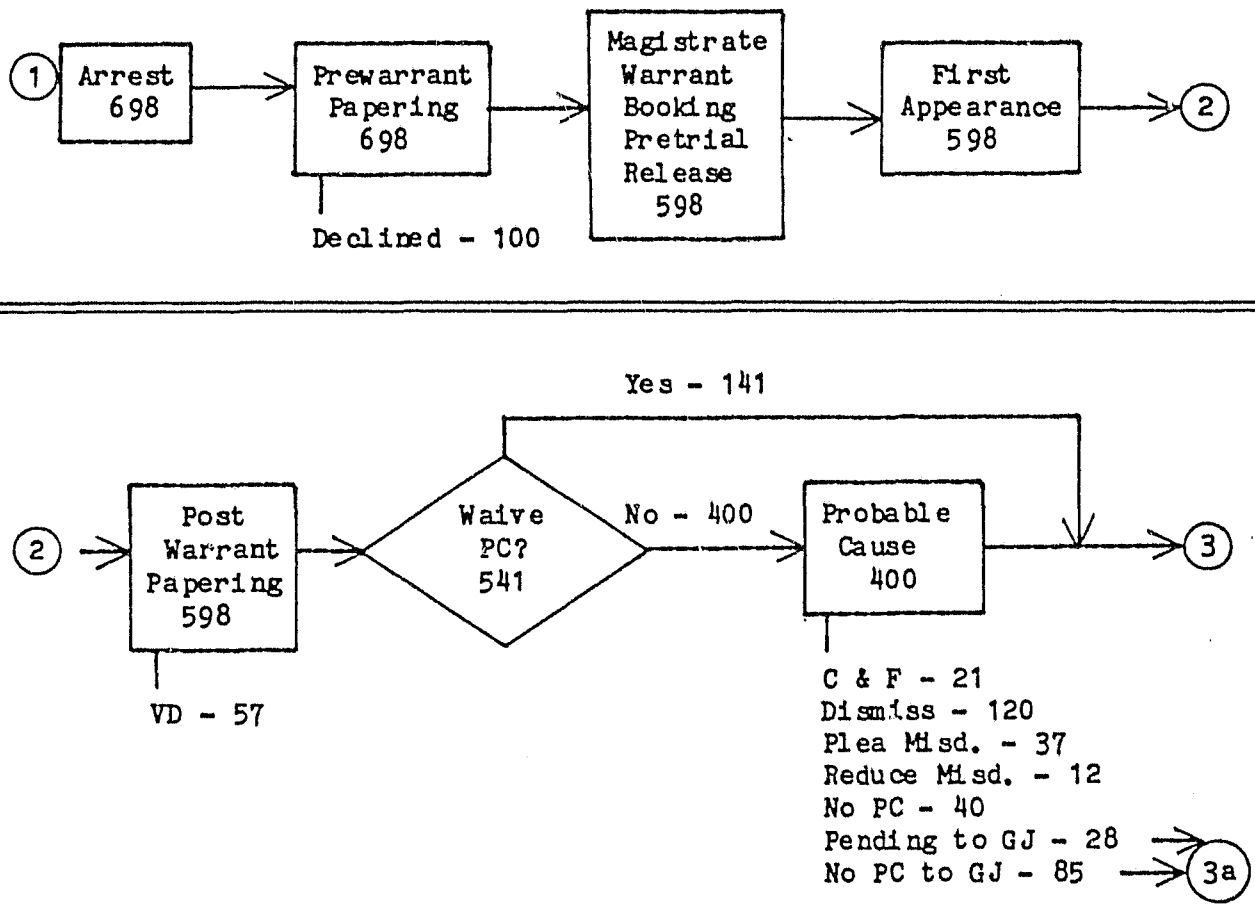
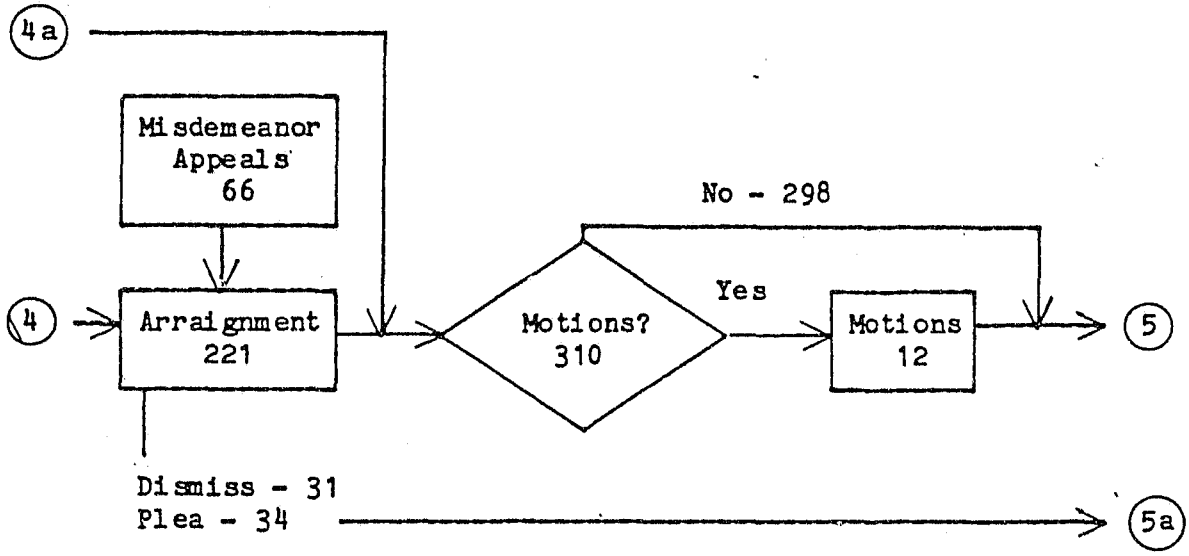


Figure 5.5(cont.)

Typical Court System Flow Chart



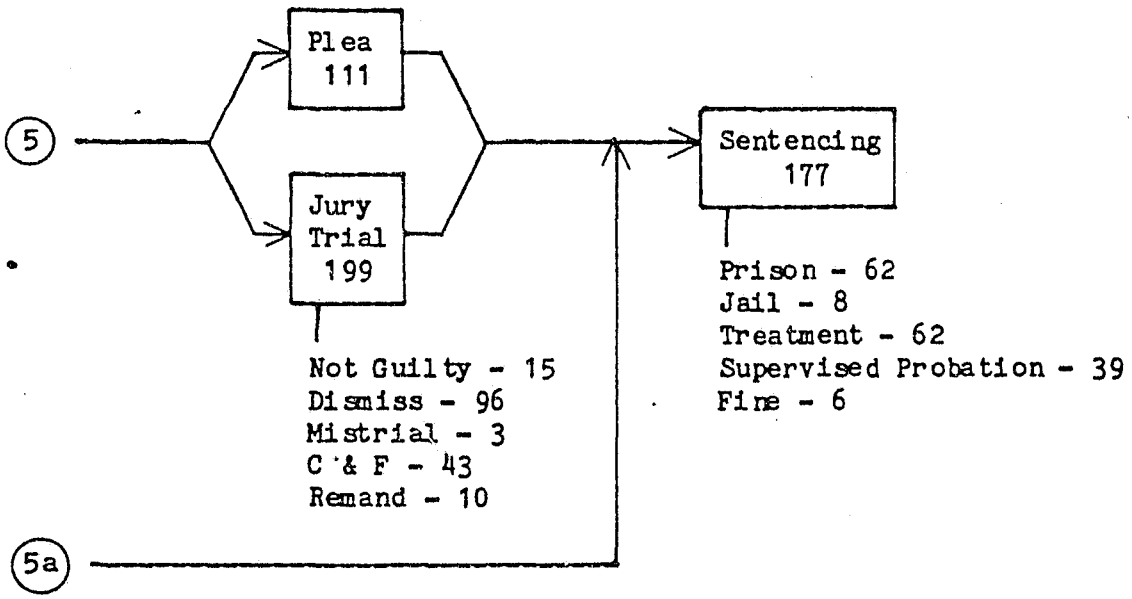


Figure 5.6

One-step Transition Matrix

Step	Result 1	2	3	4	5	6	7	8	9	10	11	12	13
1	.00	P1:2	P1:3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	P3:4	P3:5	P3:6	.00	.00	.00	.00	.00	.00	P3:13
4	.00	.00	.00	.00	P4:5	P4:6	.00	.00	.00	.00	.00	.00	P4:13
5	.00	.00	.00	.00	.00	P5:6	.00	.00	.00	.00	.00	.00	P5:13
6	.00	.00	.00	.00	.00	.00	P6:7	P6:8	P6:9	P6:10	.00	.00	P6:13
7	.00	.00	.00	.00	.00	,00	.00	P7:8	P7:9	P7:10	.00	.00	P7:13
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	P8:11	P8:12	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	P9:11	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	P10:11	P10:12	.00

1	-	Intake	7	-	Motion
2	-	Reject	8	-	Jury Trial
3	-	Lower Arraignment	9	-	Plea
4	-	Preliminary Hearing	10	-	Bench Trial
5	-	Grand Jury	11	-	Sentencing
6	-	Upper Arraignment	12	-	Acquit
13	-	Dismiss			

This procedure can be generalized. The n-step transition matrix can be found by raising the one-step transition matrix to the nth power. In matrix notation, this is represented by the following formula.

$$P^n = P \quad \text{if n is odd}$$
$$= P^2 \quad \text{if n is even}$$

The elements in this matrix indicate the probability of being in state j n periods hence given that the initial state was i. The complete sequence of random variables {X1,X2,X3,...Xn} underlying the process has been completely described by the one-step through the n-step transition matrices.

Data Requirements.

In order to use the Markov process, it is necessary to first model the process in question. Once the process is modeled the one-step probabilities must be collected. These probabilities can be calculated to include the probability of being continued (essentially the probability of not moving out of a stage).

Key Assumptions.

The key assumptions are twofold. First, the Markov assumption is that an event in the next state is only related to the present state in the process. Second, it is assumed that the one-step transition probability matrix is stable. If the first assumption does not hold, the transition probability matrix becomes much more difficult to work with. As a result, we felt that the Markov model would provide an adequate model for an initial foray into the estimation of the cost of continuances. The second assumption about the stable one-step probability matrix is probably valid in the case of the court system since the time frame for the typical case is not all that long, most cases being disposed within 6 months to a year. If the transition probability matrix shifts, it merely means that this changed matrix has to be incorporated into the analysis.

Relevant Questions.

The questions which are addressed by this technique are pertinent to this study. These include:

1. What is the potential cost of a continuance(at any stage in the court process)?
2. What is the effect on the costs at each stage, or for the whole system if the likelihood of a continuance is decreased?
3. What is the probability if a particular process stage is completed (e.g. preliminary hearing), that a certain outcome will occur at the next process point (e.g. a dismissal).
4. Given that a defendant is indicted by a grand jury, what is the probability of the case having at least one continuance?
5. If the defendant is currently being arraigned, what is the probability that 3 periods later he or she will have been convicted?

6. What is the steady state probability of a continuance?
7. How would each of the above questions change if the one-step transition matrix was to change(e.g. more judges are added, fewer motions were entered, or pre-trial diversion programs were introduced)?

Conclusion.

This brief examination suggests that a model based upon the Markov chains is the most appropriate of viewing the adjudication process. This preference is based both upon the types of issues which can be addressed and the availability of data to estimate a model. Further, the model is intuitively attractive and understandable to those who work within the system.

The other approach also has value. It however, would be best applied in areas where data is more plentiful and the issues which that model addresses are of interest.

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