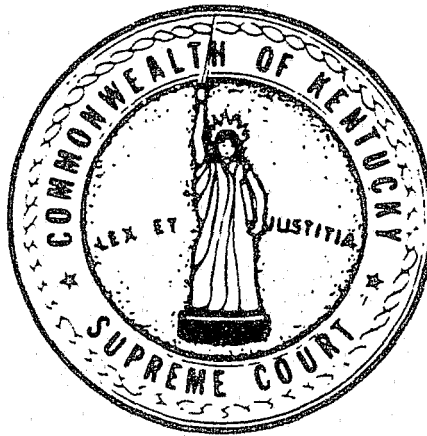




**AN EVALUATION OF KENTUCKY'S
INNOVATIVE APPROACH
TO MAKING A VIDEOTAPE RECORD
OF TRIAL COURT PROCEEDINGS**



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AN EVALUATION OF KENTUCKY'S INNOVATIVE APPROACH
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Introduction

Since the advent of videotape technology, different people have considered its use as a medium for making the record of trial court proceedings. From 1973 through 1975, the Franklin County Court of Common Pleas in Columbus, Ohio, and the Hamilton County Criminal Court in Chattanooga, Tennessee, experimented with video recording of trial proceedings. Mixed results caused those efforts to be discontinued. Improved technical quality and lower costs, however, have led Kentucky Circuit Judge James S. Chenault, with the approval of the Kentucky Supreme Court and the support of the Administrative Office of the Courts, to introduce a system by which a video record has been made since 1982 of all trials in the Madison County Circuit Court in Richmond, Kentucky.

Building on the experience of Judge Chenault, the Administrative Office has undertaken to extend the use of video to make the trial court record. In 1984, Administrative Director Don Cetrulo and his technical operations manager, Fabian Campbell, began work with Judge Chenault, Judge Laurence E. Higgins, Chief Judge of the Jefferson County Circuit Court in Louisville, and with David W. Green, President of Jefferson Audio Video Systems to introduce a videotape system (modified in significant respects from that employed by Judge Chenault) for making the record of proceedings in Judge Higgins's courtroom. The videotape system became operational in that courtroom in February 1985, and legislative funding is being

sought for 10-12 more such systems in Louisville and Lexington in the coming year.

This report presents the results of an evaluation of the video system developed for making the record of proceedings before Judge Higgins in Louisville. From March 20 to 22, 1985, Samuel D. Conti, director of the Northeastern Regional Office of the National Center for State Courts, and David C. Steelman, a senior staff attorney in that office, visited Louisville with Mr. Cetrulo and Mr. Campbell. They met with Judge Higgins, Mr. Green, and members of the local bar who had participated in videotaped proceedings before Judge Higgins. They also observed the video system in operation, as it recorded not only legal proceedings before the judge but also a substantial part of their evaluation interviews.

AN EVALUATION OF KENTUCKY'S INNOVATIVE APPROACH
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Summary of Results

During the evaluators' visit to Louisville, they were impressed with the technical quality of the system designed for Judge Higgins through the joint effort of the Administrative Office of the Courts and Jefferson Audio Video Systems (JAVS). The system has four fixed, wall-mounted color cameras in the courtroom and one such camera in the judge's chambers, along with six voice-activated microphones in the courtroom and one microphone in chambers. Switching from one microphone and camera to another is done by means of a computer-programmed sound mixer patented by JAVS.

The system has operated extremely well to date in Judge Higgins's courtroom. While some minor problems remain to be resolved, the system has been well received by all participants in the proceedings before Judge Higgins. Transcripts have already been prepared from the videotape record for some of the cases that the judge has heard. Kentucky appellate courts have agreed to hear videotaped matters from Judge Chenault's court, but conclusions have not yet been reached on the suitability of videotape records for appellate review.

To perform the evaluation reported here, the evaluators have done a cost-benefit analysis of several different court reporting alternatives. The use of cost-benefit analysis has not been free from controversy. Some critics, for example, have urged that placing a dollar value on such things as the worth of a human life

is at best difficult and at worst callous and inhumane.¹ Yet practitioners in both business and public administration have found cost-benefit analysis useful as a tool to aid decisionmaking. Recognizing its limitations, the evaluators make use here of a simplified approach to cost-benefit analysis, enabling them to appraise the strengths and shortcomings of videotape and other ways to make and transcribe the record of trial court proceedings.

For purposes of the evaluation reported here, the evaluators have compared the costs and benefits of videotape, with and without a record transcribed on paper, with five other court reporting alternatives. The results of comparing the costs of the different alternatives are presented in Chapter III below, in Table 3; of benefits, in Table 6 in Chapter IV; and of costs and benefits together, in Table 7 in Chapter V.

As Table 3 suggests, the judgment of the evaluators is that the costs for the videotape court reporting system in Louisville (with or without transcripts) are about the same as those for most of the other court reporting techniques, with cost scores virtually identical to those for manual and machine shorthand (without computer-aided transcription, or CAT) and sound recording. Machine shorthand with CAT stands out as somewhat more costly than all the other alternatives, while the use of per-diem reporters is clearly the least costly option.

Table 6 shows the judgment of the evaluators about the relative benefits of the reporting alternatives under consideration.

1. See Ira R. Hoos, System Analysis in Public Policy (Berkeley, CA: University of California, 1972).

Overall, videotape-- with or without transcripts-- returns benefits far above those available from any of the other alternatives. In the middle are audio recording and CAT, which are rated exactly equal in benefits by the evaluators. Rated lowest of all are the three alternatives now most commonly used in Kentucky courts: official court reporters using manual shorthand, official court reporters using machine shorthand, and per-diem reporters.

Because of its high benefits and moderate costs, videotape without transcription, in the judgment of the evaluators, is the most desirable of the alternatives considered here, followed closely by videotape with transcription. As Table 7 indicates, sound recording and per-diem reporters are next, with sound recording considered somewhat better overall. Employment of computer-aided transcription (CAT) with machine shorthand is considered only slightly better than traditional manual or machine shorthand, and machine shorthand without CAT ranks as the least desirable alternative, even less suitable than manual shorthand.

The consequences of these conclusions for Kentucky are clear. The Kentucky courts should commit themselves no further to CAT than they already have. While use of per-diem reporters returns only limited benefits (see Table 6), broader use of per-diem reporters (undertaken in the past year in some circuits as a cost-saving step) might not be inappropriate-- as an interim measure only-- pending the funding and implementation of improved court reporting systems. Statewide use of videotape should be the goal of the court system, and firm steps should be taken to realize the potential benefits of having appellate review on the videotape record, without resort to transcripts, in appropriate cases.

For court systems in other jurisdictions, the conclusions are different only in minor details. The apparent quality of the video system in Louisville suggests that barriers encountered in the 1970s to implementation of video systems have been largely overcome. Court leaders should give close attention to the Kentucky effort, for it suggests that videotape can be a viable alternative to the two systems now given most prominent consideration as solutions to court reporting problems-- CAT and sound recording. In fact, the evaluators urge court policymakers to consider that broader use of CAT may represent little improvement at all over the traditional techniques of either manual or machine shorthand without CAT.

CHAPTER I.

VIDEOTAPE SYSTEMS TO RECORD TRIAL COURT PROCEEDINGS

In the late 1940s and early 1950s, television started to become a major feature in American culture. Since then, considerable attention has been given to the relationship between video technology and the courts. Possible uses of video in court proceedings have been varied, and it is valuable to distinguish the making of a videotape record from other uses. The first part of this chapter undertakes to distinguish the different court uses of videotape.

To develop an understanding of the system under evaluation here, it is also helpful to consider previous undertakings of a similar nature. For that purpose, the efforts in Columbus, Ohio, Chattanooga, Tennessee, and Richmond, Kentucky, are described below. This chapter then concludes with a description of the videotape system that has been installed for Judge Higgins in Louisville, Kentucky.

A. Alternative Court Uses of Videotape

Perhaps the most widely-known use of video is for television coverage of court proceedings, in which commercial or public television stations broadcast segments of court proceedings considered newsworthy. As of January 15, 1985,² such media coverage of courtrooms has been approved for both trial and

2. "Cameras in the State Courts," 9 State Ct. J. (no. 1, Winter 1985) 4, at 5.

appellate courts in 23 states, has been approved for appellate courts only in 5 states, and is under experimental consideration in another 12 states.

Within the legal community, the most popular and successful application of videotape has been to record depositions and evidence before trial.³ Prerecorded depositions have been used to reduce potential inconveniences for out-of-state and sick or dying witnesses, as well as doctors and other expert witnesses, thereby decreasing court continuances and delays.

A third videotape use involves closed-circuit television (CCTV), by which a person not in the courtroom at the time proceedings were underway would nevertheless take part in such proceedings: by appearing before a video camera and a microphone that connects from where he or she is located to the courtroom, that person could communicate with other participants in the proceedings without having to be physically present in the courtroom. CCTV has been employed for arraignment of criminal defendants who are detained in a facility separate from where the arraignment judge is located,⁴ and it can be used for such other purposes⁵ as testimony of distant expert witnesses, testimony in child-abuse cases where

3. See J. Greenwood, et al., Audio/Video Technology and the Courts. Guide for Court Managers [hereinafter, Greenwood, Audio/Video Guide], pp. 36-37 (Denver, CO: National Center for State Courts, 1977).

4. For a discussion of videotape use for arraignments in Miami, Florida, with mention of the same practice in Boise, Idaho, and Las Vegas, Nevada, see Administrative Office of the Courts, Eleventh Judicial Circuit of Florida, Video Arraignment Systems (1982).

5. See S. Conti, "In-Court Personnel-- Reassignment of Responsibilities: A Technological Approach" [hereinafter, Conti, "In-Court Personnel"], (forthcoming, 1985).

being in the immediate physical presence of the defendant would intimidate a complaining witness, and maintenance of courtroom and courthouse security.

Still another videotape use is for educational and instructional purposes. Videotape has been employed for orientation to the judicial process for jurors and other citizens, and it has also been employed for explanation of defendants' rights before arraignment. It has enormous potential for broader uses, however, involving presentation of information to judges, lawyers, law students, and members of the public.

Yet another video use in the courts is for prerecorded videotaped trials (PRVTT), where all testimony and evidence is prerecorded and edited for presentation to a jury. This technique was pioneered by Judge James L. McCrystal of the Erie County Court of Common Pleas in Sandusky, Ohio.⁶

PRVTT differs from the videotape use under evaluation here. With PRVTT, only the opening and closing statements of counsel and the judge's instructions are given "live" to the jury; all testimony and evidence are prerecorded out of jury presence, edited under the supervision of the trial judge, and are then presented on videotape to jurors. With video recording of trial proceedings, the judge, jurors, attorneys, parties and witnesses are assembled in a courtroom, and participants go forward as they would without the presence of video cameras. Instead of having proceedings recorded by a court reporter using manual shorthand or operating a shorthand

6. See J. McCrystal, "Videotaped Trials: A Primer," 61 Judicature 250 (1978); see also, U.S. Department of Commerce, National Bureau of Standards, Juror Response to Prerecorded Videotape Trials (1979).

machine or sound recording device, however, the court has the original record of the courtroom activities made by means of a multicamera video recording system. The video record of proceedings is then available for subsequent review, either by direct replay or through transcription from the videotape.

B. Franklin County (Ohio) Court of Common Pleas

The Franklin County Court of Common Pleas is a general-jurisdiction trial court in Columbus, Ohio. With funding from the Law Enforcement Assistance Administration of the U.S. Justice Department, the Court began an experiment in June 1973 to have a videotape record made of criminal trials in felony cases. In each of five criminal courtrooms, the following equipment was used:

3 Video Recorders	1 Microphone Mixer
1 Camera (black and white)	1 Audio Amplifier
3 8" TV Monitors	1 Audio Cassette Recorder
1 Date-Time Generator	

In each courtroom, the equipment (costing \$5,300 per courtroom) was in a console and was controlled by a person at a TV monitor. At the trial-court level, no operating problems were experienced. Videotapes were considered far more accurate than the record prepared by a court reporter. Since a videotape was available immediately after the conclusion of proceedings in the trial court, there was no delay in the transfer of the record in cases appealed to Tenth District Court of Appeals-- the intermediate appellate court for the area including Franklin County.

After the experiment had been in operation for about fifteen months, an analysis was done to compare the length of time to process appeals of videotaped and non-videotaped cases. It was

found that the processing time for videotaped cases was almost a month shorter than that for non-videotaped cases. From these results the Chief Justice of the Ohio Supreme Court concluded that the videotape experiment was showing positive results, in that important time savings in the appellate process could be attributed to the employment of a videotape record without the use of transcripts.⁷

The Columbus-Franklin County Criminal Justice Coordinating Council reached a different conclusion, however. With the same evidence, it was noted that videotaped cases had been given priority in scheduling in the appellate court; from this additional fact, it was concluded that videotaping did not have a significant effect on the time required for the appeals process.⁸ Moreover, the judges of the Tenth District Court of Appeals found that the viewing of videotapes was too time-consuming.⁹ The Legal Aid & Defenders Society had a similar experience,¹⁰ finding that it took about seven times longer to review a videotape record than a typed transcript, and that the videotape record was boring and often

7. See "Report of the Chief Justice on the Savings in Time from the Termination of a Case in the Trial Court to the Termination of that Case in the Court of Appeals resulting from the Use of a Videotape Record as the Official Transcript of Proceedings in the Trial Court" (Supreme Court of Ohio, undated).

8. See D. Ferriman, "A Comparison of the Length of Time to Process Appeals of Video Taped and Non-Video Taped Cases" (Columbus-Franklin County Criminal Justice Coordinating Council, November 15, 1974).

9. Memorandum, to the Videotape Committee, Franklin County Common Pleas Court, from the judges of the Tenth District Court of Appeals, p. 1 (undated).

10. Letter, to the Judges of the Franklin County Common Pleas Court, from Ted L. Earl, Esq., Chairman, Common Pleas Court Committee of the Columbus Bar Association (November 25, 1975).

filled with moments when recorded speech was inaudible.

In view of its problems, the Court of Appeals requested, with the support of the prosecutor, that a written transcript be prepared to supplement the videotape record. With this additional step, any time advantage from the use of a videotape record appears to have been lost: a representative from the National Shorthand Reporters Association (NSRA) observed that typists preparing transcripts from video were producing only 25 pages per day, in comparison to a claimed rate of 125 pages per day for a court reporter.¹¹

Thus, there was almost universal opposition to videotaping among court reporters, attorneys and appellate judges. As a result, the Columbus experiment was discontinued as of January 1, 1976, by a vote of seven to three among the judges of the general division of the Court of Common Pleas.

C. Hamilton County (Tennessee) Criminal Court

At about the same time as the experiment in Columbus was underway, a pilot television recording-system project was undertaken in Tennessee pursuant to a recommendation by the Office of the Executive Secretary to the Tennessee Supreme Court.¹² When Criminal Court Judge Joseph F. DiRisio came to the bench in 1974, equipment had been installed to have a videotape record made of

11. Ibid. See below, Chapter IV, footnote 31, for further discussion of the NSRA representation that court reporters prepare about 125 pages of transcript per day.

12. See Tennessee Supreme Court, Office of the Executive Secretary, "Report on Recommendations on Pilot Television Recording System for Hamilton County Court, Tennessee, Criminal Court Division 2" (undated). The description here of the system configuration is based on that report.

felony proceedings before him in the Hamilton County Court, Criminal Court Division 2, in Chattanooga, Tennessee, and he agreed to continue the experimental use of the system. In his courtroom, the pilot project employed the following equipment:

- 3 Monochrome Video Cameras (with remote control)
- 3 Video Tape Recorders
- 1 Audio Cassette Recorder
- 8 Microphones
- 3 Video Monitor/Receivers
- 2 Straight Video Monitors
- 1 Video Switcher/Special-Effects Generator
- 1 Audio Mixer
- 1 Two-Way Intercom System
- 1 Date-Time Generator

Operation of the pilot system was to be done by a court employee located in an enclosed production control booth in the rear of the courtroom, in communication with the bench through an intercom system. Two cameras were enclosed in recessed areas in the ceiling (one at the right rear of the courtroom as viewed from the bench, and the other at the front of the courtroom, to the judge's left), and they were equipped by remote control from the operator's booth to sweep horizontally and vertically around the courtroom, with zoom lenses for closeups. The third camera was fixed at the center of the back wall of the courtroom, without horizontal or vertical sweep and without a zoom lens. There were three monitor/receivers in the operator's booth for operation of the system. A monitor on the bench with split-screen capacity permitted the judge to observe what was being recorded, and there was another monitor for playback of the videotaped record.

As in Columbus, Ohio, few problems were experienced in the trial courtroom with the operation of the video equipment. For the first six months of the experiment, a shorthand reporter was present in

the courtroom to make a backup record of proceedings. After six months, however, the reporter was no longer in the courtroom, and the court simply made a log record of the events in courtroom proceedings, as an index to the videotape record. Local rules called for attorneys in cases on appeal to refer to the reporter's log entries for reference to specific points in the record.

As in Columbus, however, appellate judges experienced difficulties with the time consumed by review of the video record. In spite of the local rule intended to ease appellate judges' use of the video record, too much time was consumed in their record review, for a large number of the appealed cases involved claims that the verdict was unsupported by the evidence-- a claim usually requiring appellate perusal of the entire record. Because the videotape for each case faithfully recorded everything, including such things as the entry and exit of the jurors, the swearing in of witnesses, and all the other pauses and moments of "downtime" in the trial proceedings, review of the record involved hours of unproductive time for appellate judges.¹³

With twelve videotape cases appealed, the appellate judges concluded that review of the video record was more cumbersome and less efficient than review of a written transcript. As a result, the Chattanooga experiment was discontinued at the end of 1975.¹⁴ When Judge DiRisio's courtroom was relocated to the new Hamilton

13. Telephone interview with Judge Joseph F. DiRisio, Hamilton County Criminal Judge, by David C. Steelman, National Center for State Courts, April 1, 1985.

14. See National Shorthand Reporters Association, News Release, "Man Preferred Over Machines, Courtroom Videotape Experiment Discontinued" (January 1976).

County Justice Building, the video equipment was not included in the move.

D. Madison County (Kentucky) Circuit Court

Since late 1981, Madison County Chief Circuit Judge James S. Chenault has had all trials recorded on videotape in his Richmond, Kentucky, courtroom.¹⁵ A court employee sitting outside the courtroom operates two fixed-location cameras and one movable wide-angle camera to record trial proceedings. Monitors in the control room allow the operator to switch cameras and create split-screen images. The operator has a character generator to superimpose the name of the person shown on the videotape. The operator also monitors the recording of proceedings on two standard half-inch videocassette recorder (VCR) devices. (The two recorders operate simultaneously, with one serving as a backup device; the second original videotape record thus made is available for loan to and duplication, if requested, by counsel.)

The judge has a monitor at the bench to view the image being recorded. A second monitor in the courtroom is used when it is necessary to play back any part of earlier proceedings. A monitor has been placed in the court library, so that others may observe the trial in a less formal setting.

In the three-and-a-half years of its operation, the system (costing about \$50,000) has experienced only one minor breakdown. Conclusions have not yet been reached about the suitability of a

15. This description of Judge Chenault's videotape system is taken largely from Conti, "In-Court Personnel".

videotape record on appeal. The appellate courts have agreed to participate in an experiment, to review matters on appeal both directly on videotapes and by means of transcripts from videotapes. Moreover, Kentucky Supreme Court Chief Justice Robert F. Stephens appointed a committee in April 1985, chaired by Supreme Court Associate Justice Charles M. Liebson and including two intermediate appellate court judges, two circuit court judges (Judges Chenault and Higgins), and three attorneys, to draft rules governing cases in which videotape is the record on appeal and no transcript has been prepared.¹⁶

D. Jefferson County (Kentucky) Circuit Court

Based upon the perceived success of the videotape effort in Judge Chenault's court, Kentucky's Administrative Office of the Courts has begun to extend videotaping to other courts in the Commonwealth. In 1984, Administrative Director Don Cetrulo and his operations manager, Mr. Fabian Campbell, began work with Judge Chenault to introduce another videotape system in the Circuit Court for Jefferson County, in Louisville. Chief Circuit Judge Laurence E. Higgins of Louisville agreed to participate, and important modifications were made from the model provided by Judge Chenault's system before a system was operational for Judge Higgins.

Making these modifications with Mr. Campbell was Mr. David W. Green, President of Jefferson Audio Video Systems (JAVS), a private company in Louisville. The most significant development introduced

16. Telephone communication, from Don Cetrulo, Esq., Director, Administrative Office of the Courts, to David C. Steelman, National Center for State Courts, April 17, 1985.

by Mr. Green was a sophisticated voice-activated sound mixing system. Under this new system, patented by JAVS, a computer program activates cameras to switch automatically and instantaneously to give a closeup picture of the judge, attorney or witness as soon as he or she begins to speak.¹⁷

The audio-video system for Judge Higgins became operational in February 1985. Administrative Director Cetrulo plans to seek legislative support for 10-12 more such systems to be installed in other Circuit Court courtrooms in Louisville and Lexington in the coming year.

The system in Louisville includes equipment both for Judge Higgins's courtroom and for the judge in chambers. The cost for each courtroom-and-chambers system is currently about \$30,000, with the systems planned for introduction in the coming year costing less because of what was learned during installation of the system for Judge Higgins. For the courtroom, the following equipment is employed:

1 Programmable Microphone Mixer & Interface	1 AC-to-DC Power Converter
5 Microphones	2 8" TV Monitors
1 Octave Equalizer	9 Speakers
4 Fixed, Wall-Mounted Color Cameras	2 VHS Units
1 Vertical Interval Video Switch	1 60-Watt Amplifier
1 25" Color Monitor, with Portable Stand	1 Camera Control Unit
	1 Sound Reinforcement Processor

The programmable mixer, which is the heart of the system, is not located in the courtroom. Instead, it is in a secure closet outside

17. The system is described in considerable detail in a proposal dated August 14, 1984, from Jefferson Audio Video Systems to the Administrative Office of the Courts.

the courtroom, where the judge's secretary has her office. By means of the programmable mixer, the system in Louisville is able to avoid the need for an operator to switch cameras when different speakers begin to talk.

One of the eight-inch TV monitors is at the bench, for the judge to observe the quality of the video record being produced. The second eight-inch monitor is in the office of the judge's secretary, so that she can observe courtroom proceedings and respond to any requests of her made from the courtroom by the judge. The large 25" monitor is located in the courtroom, but it is not turned on during court proceedings except for such purposes as the playing of a videotaped deposition or the playback of previous testimony.

The total cost for the system also includes that for further equipment in the judge's chambers. The equipment in chambers consists of the following:

- 1 Fixed, Wall-Mounted Color Camera
- 1 4" or 8" TV Monitor
- 1 Microphone

By means of this equipment, courtroom proceedings can be observed from the judge's chambers. In addition, the equipment permits the judge to conduct parts of the proceeding in chambers, but with jurors, attorneys, parties and other persons in the courtroom able to observe chambers activities on the 25" monitor in the courtroom.

CHAPTER II.
CURRENT STATE OF COURT REPORTING
IN KENTUCKY

The use of videotape for making the record of trial court proceedings in Madison County and Jefferson County Circuit Courts reflects the expectation by the Circuit Court chief judges in those counties and by the Administrative Office of the Courts in Kentucky that such a technique can be shown to be superior to other available court reporting alternatives. To test the accuracy of that expectation, the evaluators from the National Center for State Courts undertake in this report to compare the costs and benefits of videotape with those of other available techniques.

Before proceeding to a comparison of different approaches to court reporting, this chapter discusses the current situation in the Kentucky court system with regard to cost and management of court reporting services. Then follows an analytical description of the different approaches to (a) making the record, and (b) transcribing the record that are currently employed in Kentucky. Since court reporting systems in practice combine different approaches to making and transcribing the record, the next step is to identify realistic alternatives among which court policymakers might choose in selecting what they consider the most suitable court reporting system. Seven court reporting alternatives are identified for comparison in Chapters III-V, first in terms of costs, then in terms of benefits, and finally with costs and benefits considered together.

A. Present Trends in Kentucky Management of Court Reporting Services

The Kentucky court system now spends over two million dollars a year in direct expenditures for court reporting services, and the amount budgeted for fiscal year 1985-86 is 67% higher than the amount spent for court reporting services in fiscal year 1979-80.¹⁸ Trends in direct court system expenditures for court reporting services are shown below in Figure 1.

Kentucky currently has about 89 court reporters who are full-time, salaried court employees: about two-thirds of these use manual shorthand as their principle method of recording proceedings, and virtually all of the remaining reporters use machine shorthand.¹⁹ They are paid salaries ranging from \$13,200 to \$20,484 per year,²⁰ although those who are court reporter/secretaries (about 19 persons) are each paid an additional \$2,000 for their additional duties. With fringe benefits added to their salaries, official court reporters in Kentucky earn as much as \$20-22,000 each per year.

As Figure 1 below shows, salaries and fringe benefits for court reporting personnel account for the lion's share of the total court system expenditures for reporting services. Reporter salaries and benefits budgeted for fiscal year 1985-86 are over 50% higher than total reporter salaries and benefits paid in fiscal year 1979-80.

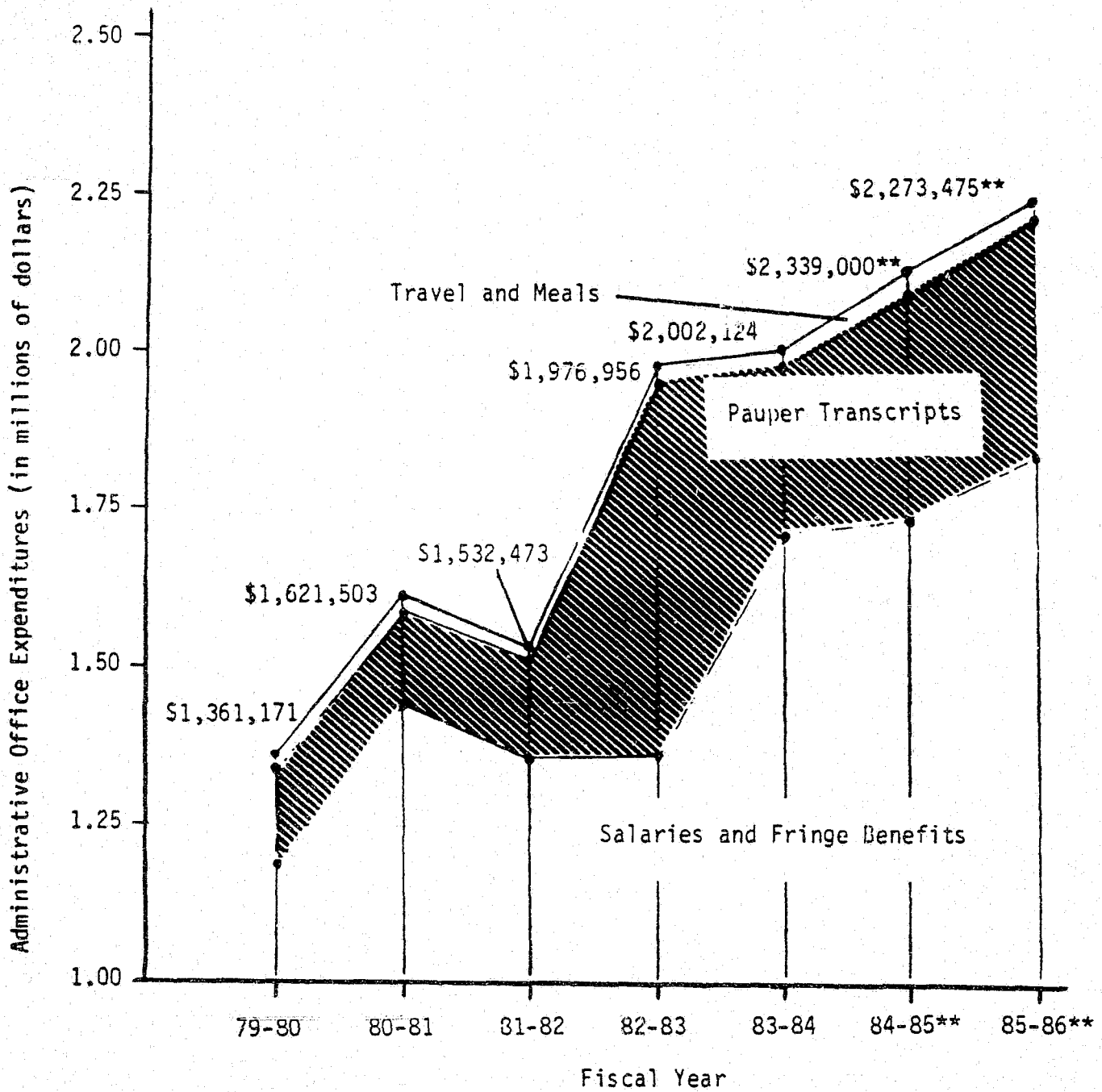
18. Unless otherwise noted, the Administrative Office of the Courts in Frankfort, Kentucky, is the source of this and all the other figures shown here for budgeted and actual court reporting expenditures.

19. Conference of Court Administrators, Committee to Examine Court Reporting Services, Court Reporting Practices Among the State Court Systems. Survey Results [hereinafter, COSCA, Survey], pp. 68-69 (Williamsburg, VA: National Center for State Courts, 1984).

20. Ibid. See Ky. Constitution 110(5)(b).

FIGURE 1.

DIRECT COSTS TO KENTUCKY COURTS
FOR COURT REPORTING SERVICES*



* Source: Commonwealth of Kentucky, Administrative Office of the Courts.

** Figures for fiscal years 1984-85 and 1985-86 are revised budget figures in the Administrative Office.

Yet the proportion of the total expenditures consumed by salaries and fringe benefits has declined since fiscal year 1979-80 (from 87.8% that year to 80.6% of the revised budget for fiscal year 1985-86), largely as a result of steady increases in the amounts paid in fees to court reporters for "pauper" transcripts, which are provided at Commonwealth expense to defendants appealing in forma pauperis from criminal convictions or sentences.

For pauper transcripts, the Commonwealth pays \$1.30 per original page and \$0.70 per copy page. Transcript fee rates recommended for private parties are \$1.80 per page for an original page and \$1.00 per page for a copy; yet reporters in fact charge whatever the market will bear, and practices vary from county to county. Court reporters are not obliged in Kentucky to report total transcript-fee income; and the only figures easily available for this evaluation, unfortunately, were those for pauper transcripts.

For official court reporters in Kentucky, the Commonwealth pays for supplies and equipment only to the extent of providing a typewriter, pads and pencils. Reporters using machine shorthand must provide and maintain their own equipment. For such supplies and equipment, along with payments for travel (at 18¢ per mile) and meals (\$4.50 for lunches), the Administrative Office paid slightly over \$20,000 in fiscal year 1979-80 and has budgeted just over \$36,000 for fiscal year 1985-86. (See Figure 1 above.) In Lexington, court reporters for the Fayette County Circuit Court (7 court reporter/secretaries, of whom 2 use machine shorthand) have a CAT system for which the Commonwealth paid approximately \$100,000, but which, in the words of the Director of the Administrative Office of the Courts, has "fallen apart" in operation. Office space is

provided for official court reporters, at a statewide average space value of \$4.60 (\$5.50-6.00 in Louisville) per square foot.

In addition to official court reporters, the Kentucky court system uses freelance reporters on an as-needed basis, paying \$75 per day. In some circuit courts, judges are no longer hiring official court reporters to replace those leaving court employment. Instead, they are engaging freelance reporters on a per-diem basis, thereby saving court expenditures for fringe benefits. As a result of this development, the Administrative Office of the Courts estimates that its court reporting expenditures will be about \$200,000 lower in fiscal year 1984-85 than the \$2.34 million budgeted for reporting services.

In fiscal year 1981-82, when about \$1.8 million was budgeted for reporting services, the Commonwealth experienced a severe revenue shortfall. As a result, the Administrative Office was forced to spend some \$300,000 less than the budgeted amount (see Figure 1 above) for reporting services, and they accomplished this by means of a personnel freeze and by urging reporters to delay submission of fee bills for pauper transcripts. Since that time, the Administrative Office has sought to retard annual increases in expenditures for reporting services through careful budget monitoring and by cutting back in the number of official court reporters. In Louisville, for example, the number of official court reporters was reduced from 17 to 12 by pooling reporters instead of having them assigned individually to judges.

With large turnovers in judgeships in recent years, newer, younger judges have not been as wedded to old practices and have been willing to explore other alternatives. This is the setting in

which the development of videotape systems to record trial court proceedings before Judges Chenault and Higgins came about.

B. Court Reporting Techniques Now Used in Kentucky

In addition to the videotape techniques used by Judge Chenault in Madison County and Judge Higgins in Jefferson County, there are basically two methods²¹ by which the record is made of trial court proceedings in Kentucky-- manual shorthand and machine shorthand (stenotype), although there is also some limited use of sound recording (audio) as a backup system. In addition, there are basically three methods by which the record is transcribed-- typing by the reporter who made the record, typing by another person (from

21. It appears that there is one court reporter in Kentucky who employs Gimelli voicewriting to record court proceedings. For a description of voicewriting and an evaluation of its use in a major metropolitan trial court, see W. Popp, S. Conti, and D. Steelman, Philadelphia Standards and Goals Exemplary Court Project. Final Evaluation, pp. 94-101 (North Andover, MA: National Center for State Courts, 1978). Voicewriting will not be considered in the comparison here of Kentucky court reporting alternatives, however, in view of the minimal likelihood that its current limited use in the state will be expanded in the future.

Although used only as a backup system in Kentucky, electronic sound recording is being considered in many other states for greater use in general-jurisdiction trial courts as an alternative to machine shorthand. See generally, COSCA, Survey, pp. 25-53. See also, D. Steelman, et al., Alternate Court Reporting Techniques for Connecticut (North Andover, MA: National Center for State Courts, 1979); D. Steelman, et al., Court Reporting Services in New Jersey (North Andover, MA: National Center for State Courts, 1978); and J. Greenwood, et al., A Comparative Evaluation of Stenographic and Audiotape Methods for United States District Court Reporting (Washington, DC: Federal Judicial Center, 1983).

Because of the potential for growing use of sound recording in many jurisdictions around the country, sound recording will be included among the alternatives compared here, even though it now has limited use in Kentucky and may be precluded from broader use because of the decision in the Administrative Office to make greater use of video.

reporter dictation or directly from the source medium), and computer-aided transcription (CAT).²² Each of these methods for making and transcribing the record will be described briefly before there is a cost-benefit comparison of different court reporting approaches.

Making the Record by Manual Shorthand. The most common method employed in Kentucky for making a record of trial court proceedings is manual shorthand. By this method, a court reporter sits in the courtroom and makes a record by handwriting graphic symbols that represent phonetic speech on paper.

Making the Record by Machine Shorthand (Stenotype). Most frequently seen in most general jurisdiction courts around the country, this method is less commonly used in Kentucky. A court reporter trained in this technique records court proceedings by striking keys on a special keyboard (the shorthand machine), thereby recording symbols on a paper tape that represent phonetic speech sounds. When this method is augmented with CAT, the symbols are also recorded electronically on a magnetic tape.

Making the Record by Electronic Sound Recording (Audio). Using multiple microphones, a court reporter or court recording monitor operates a multitrack machine to make an audio record of court proceedings on magnetic tape. While the record is made by the sound recording machine, the reporter or monitor either makes a

22. For an excellent general overview of the different court reporting techniques, along with recommendations for enhancing the effectiveness and efficiency of reporting services, see J. Greenwood and D. Dodge, Management of Court Reporting Services (Denver, CO: National Center for State Courts, 1976).

simultaneous shorthand record or maintains a log of proceedings to index various events and identify speakers.

Transcribing the Record by Direct Typing. By this method of transcription, the reporter translates his or her shorthand symbols back into words and personally types the transcript, or has it typed by someone who can read his or her shorthand. Direct typing of transcripts is done by both manual and machine shorthand reporters.

Transcribing the Record by Dictation. Here, the court reporter reads his or her shorthand symbols and dictates them onto an audio record or tape, which is then given to a typist who prepares the transcript. This approach is used by both manual and machine shorthand court reporters.

Transcribing the Record with CAT. A court reporter must use a modified shorthand machine to employ this transcription method. Shorthand symbols are electronically recorded on a magnetic tape, by which they are fed into a computer. With the aid of a "dictionary" prepared by the reporter, the computer then translates the symbols back into words for editing on a cathode ray tube (CRT) by the court reporter. After editing, the computer prints out the transcript. In Kentucky, only two official court reporters use CAT-- in the Fayette County Circuit Court at Lexington.²³ The CAT system there has had problems to date; but since it has an excellent

23. Despite its limited current use in Kentucky, CAT is being included in the comparisons made here because it is viewed by machine shorthand reporters as an effective means to provide accurate and timely transcription [see National Shorthand Reporters Association, "Methods of Courtroom Reporting: The NSRA Perspective" (1984)], and because its use may increase (despite its problems in Lexington) in those Kentucky court locations where machine shorthand is now employed.

word-processing capability, some of the manual shorthand reporters use it rather than typewriters to type their transcripts.

C. Alternatives for Comparison

As a practical matter, comparisons are not made simply among different ways to make the record or to transcribe it. Obviously, any of the methods described above for making the record of proceedings must in practice be used with one of the methods for transcribing the record in order for the purpose of court reporting services to be met.

Another practical dimension involves the extent to which the court system bears the cost of providing court reporting services. This dimension has two aspects worth noting for the purposes of the comparison to be made here: (1) whether CAT equipment is provided at court expense; and (2) whether a court reporter is a salaried court employee, with court-paid fringe benefits, or is a private freelance reporter hired as needed on a daily "per-diem" basis. [Here, a court employee is called an "official court reporter" (OCR) if he or she employs manual or machine shorthand; is called simply a "court employee" if he or she is so employed and uses electronic sound recording (audio); and is called a "per-diem reporter" if he or she is a freelance reporter hired at a daily rate without provision of fringe benefits.]

A comparison of court reporting alternatives must, therefore, involve combined sets of recordmaking and transcription methods, and it must also consider the scope of costs borne by the court. For purposes of the cost-benefit comparison in this evaluation, there are seven alternatives to be considered:

1. Manual shorthand by an "Official Court Reporter" (OCR), with transcription by typing or dictation;
2. OCR machine shorthand, with transcription by typing or dictation;
3. OCR machine shorthand, with court-provided computer-aided transcription (CAT);
4. Sound recording by a court employee, with transcription by typing;
5. Per-diem payment of a freelance reporter, with record made and transcribed by any means;
6. Videotape, with transcription by typing; and
7. Videotape, without transcription.

The comparison below of costs, of benefits, and then of costs and benefits together will all be made in terms of these seven alternatives.

CHAPTER III.

COST COMPARISON OF SEVEN COURT REPORTING ALTERNATIVES

A critical dimension in the assessment of any court reporting technique is its cost. Ideally, a court reporting method should be relatively inexpensive to introduce and maintain. Included below in Table 1 are the different cost considerations by which the seven court reporting alternatives listed above are compared. Table 2 next shows "cost scores" for the seven different court reporting alternatives, and Table 3 rates them according to relative costs. The text in this chapter elaborates on the cost comparisons summarized in Table 3, providing dollar figures on which the cost weights are based.

Cost-benefit analyses often employ detailed calculations of present and anticipated costs of the systems or techniques under consideration. When all necessary cost information is available and accurate, and when the analyst has the time to make all necessary calculations and set forth all underlying assumptions and logic, the use of exact cost figures is desirable.

All too often, however, such cost information is neither available nor accurate, and there is a great possibility that analysts' assumptions and logical steps will go unreported and unchallenged. Cost figures presented in overwhelming detail may thus be accepted without question, even though they may actually be open to serious uncertainties.

The approach taken here has been to treat cost calculations in a simpler form, representing relative orders of magnitude, with the basis for the cost "scores" set forth in the text. This approach

permits the many discrete judgments of the evaluators to be given close scrutiny, for they can be more easily appraised than they would be if accompanied by a bewildering array of numbers. Yet, since these judgments are based on available cost figures, they are no more subjective than more detailed numerical presentations would be, despite appearances to the contrary.

A. Weighted Cost Criteria

For purposes of cost comparisons, six criteria are employed here. To reflect the fact that some aspects in the provision of court reporting services are more costly than others, these criteria are not treated as being of equal significance. Rather, they have been assigned different "weights", ranging from "1" to "10", by the evaluators. Under this weighting system, a criterion involving the greatest costs is given a weight of "10", while one involving comparatively small costs is given a "1".

1. Personnel costs for court reporters. In Kentucky, as Figure 1 above shows, expenditures for reporter salaries, fringe benefits, and per-diem payments to freelance reporters account for over 80% of the court system's two million dollar budget for court reporting services. In general, these personnel costs are likely to be the greatest single expense item in any court reporting system. Consequently, the evaluators have assigned a weight of "10" to this cost criterion.

2. Transcript fees. In addition to receiving a salary and benefits or a per-diem payment, a court reporter in Kentucky and most other states is paid a separate per-page fee for transcribing part or all of the record of a trial court proceeding. If the

TABLE 1.
COURT REPORTING COST CRITERIA

<u>Cost Criterion</u>	<u>Weight</u>
Personnel costs for court reporters	10
Transcript fees	6
Personnel cost of appellate court record review, as transcribed or in lieu of transcript	4
Cost for court facility changes to accommodate a particular recording or transcribing method	1
Capital and ongoing maintenance cost for equipment to make the record	3
Cost of supplies incidental to making and transcribing the record, and for secure storage of the original and transcribed record	1

*The "weight" assigned to a given cost criterion reflects its magnitude by comparison to other cost criteria. Thus, court reporting personnel costs are assigned a weight of "10" because they are customarily the greatest costs associated with any court reporting alternative; supply and storage costs are assigned a weight of "1" because they are very small by comparison. See the text for discussion of the basis for assignment of these weights.

Commonwealth pays the transcript fee on behalf of a criminal defendant unable to afford it, the fee in Kentucky is lower than that paid by non-indigent parties to criminal or civil litigation. To reflect the substantial impact of transcript fees on the cost of providing court reporting services, the evaluators have assigned a weight of "6" to this criterion.

3. Appellate record review. The purpose of having a trial court record made and transcribed, of course, is to make effective appellate review of trial court proceedings possible. While comparatively few matters are in fact appealed, appellate court judges are among the most highly-paid participants in court proceedings, and their time is valuable. For this reason, the evaluators have given a weight of "4" to this criterion.

4. Facility changes. In order for an effective record to be made or transcribed in the trial court, it is important that the courtroom or courthouse facilities are suitable for the court reporting method employed. At the very least, facilities must not provide such inadequate lighting, acoustics, and ventilation that it is unduly difficult or impossible to make or transcribe the record. This criterion usually involves a relative low cost, however, so that it is given a weight of "1".

5. Equipment. Court reporters making a record by manual shorthand use no more equipment than a pencil and a pad of paper. Yet the use of typewriters, word processors, shorthand machines, dictating equipment, audio recorders, videotape equipment, or computers can involve considerable costs. While initial capital expenditures can be amortized over several years, equipment costs also include those for operation and maintenance. A weight of "3"

has been assigned for this criterion.

6. Supplies and storage. The final major cost area associated with the provision of court reporting services involves such consumable supplies as paper or magnetic tapes or typewriting paper, as well as the cost of storage space for such things as tapes and transcripts. While worth considering, this is not a comparatively expensive cost area, and this criterion has consequently been given a weight of only "1".

B. Cost Scores

Given the relative importance of the different cost criteria discussed above, it is now possible to compare the seven different alternatives in terms of those criteria. To show the judgment of the evaluators as to relative costs, each alternative has been given a raw score ranging from "1" (to indicate a low-cost alternative) to "10" (to show a very high-cost alternative) for each cost criterion. Each alternative's raw score for each criterion has then been multiplied by the weight assigned to that criterion, to yield a weighted cost score for each alternative under every criterion.

1. Personnel costs for court reporters. The salary range for manual and machine shorthand court reporters in Kentucky, at \$13,200-\$20,484, is around the median for court reporter salaries in state courts around the country.²⁴ In view of this, the evaluators have given none of the alternatives under comparison here a raw cost score over "6" (see Table 2 below), since personnel costs for court reporting in Kentucky are not as high as those in such

24. See COSCA, Survey, pp. 63-76.

TABLE 2.
RELATIVE COST SCORES FOR SEVEN COURT REPORTING ALTERNATIVES

Cost Criteria	Weight**	Raw/Weighted Score for Each Alternative*						
		<u>Shorthand</u>		CAT	Audio	Per Diem	<u>Video***</u>	
		Manual	Steno				with	w/o
Personnel costs	(10)	6/60	6/60	6/60	5/50	4/40	6/60	6/60
Transcript fees	(6)	7/42	7/42	6/36	6/36	7/42	3/18	1/6
Appellate review	(4)	2/8	2/8	2/8	2/8	2/8	2/8	6/24
Facility changes	(1)	1/1	1/1	2/2	4/4	1/1	6/6	6/6
Equipment	(3)	1/3	3/9	7/21	6/18	2/6	8/24	8/24
Supplies & storage	(1)	4/4	3/3	6/6	4/4	3/3	5/5	3/3
Total Weighted Scores		118	123	133	120	100	121	123

*The "raw" score for an alternative indicates whether its cost is high, moderate or low by comparison to other alternatives; thus, a high-cost alternative receives a score approaching "10", while a low-cost alternative receives a "1". See the text for discussion of the grounds for assigning these scores. The "weighted" score is the result of modifying the raw score by the weight assigned the cost criterion.

**The "weight" assigned to a given cost criterion reflects its magnitude by comparison to other cost criteria. Thus, personnel costs are assigned a weight of "10" because they are customarily the greatest costs involved in any court undertaking; record storage and facilities costs are each assigned a weight of "1" because they are very small by comparison. See the text for discussion of the basis for assignment of these weights.

***"Video with" refers to videotape with transcription, in which the record on review has been transcribed from videotape; "Video w/o" means videotape without transcription, in which the record on review is the original videotape record.

jurisdictions as New York, New Jersey, or the District of Columbia.

The least costly alternative in terms of reporter personnel costs is the use of freelance reporters on a per-diem basis, since they are paid \$75 a day, without fringe benefits, and are used only when needed. If the Kentucky courts were to adopt sound recording (audio) as a major court reporting method, personnel costs for court employees to monitor sound recording devices in each courtroom would probably be somewhat higher than those for per-diem reporters. But they would not be as high as those for salaried reporters.²⁵

Advocates of videotape systems might argue that personnel costs for videotape should be lower than those for other alternatives, because the use of videotape to make the trial court record does not involve an in-court machine operator comparable to the operator of a shorthand machine or the monitor of an audio device. Although the introduction of videotape in Judge Higgins's courtroom has eliminated his need for a court reporter, it may be that the Kentucky courts will not eliminate court reporter positions other than by attrition as broader use is made of videotape in Kentucky courts.²⁶ Since the court reporter or court

25. In fact, if Kentucky trial courts were to use centralized sound recording, as is done in Montgomery County, Maryland, and in Delaware County, Pennsylvania, personnel costs for audio would be lower than even per-diem costs, since a single technician would simultaneously monitor audio machines in three or four courtrooms.

26. Even if the court reporters are retained, however, it is likely that they will be used by the courts in a different way. Freed from the demands of being in the courtroom, they will be able to perform other services. The broader use of videotape is thus viewed by the evaluators as contributing to the enhancement of court productivity-- a benefit criterion-- so that it will be discussed again in Chapter IV below, where alternatives are compared in terms of benefits.

reporter/secretary is likely to be retained as a court employee when videotape use expands, the evaluators have chosen to treat personnel costs for videotape (with or without transcription) as equal to those for more traditional alternatives.

2. Transcript fees. Under this criterion, the evaluators see considerably more difference among the alternatives than they see in personnel costs. Manual shorthand, machine shorthand, and per-diem reporting are rated as high-cost alternatives, since court reporters using any of these methods now charge fees to private parties that are as high as the market will bear. With the use of CAT or audio recording, fees can be somewhat lower because each of these alternatives presents possibilities for efficiencies in transcript preparation.

Videotape, however, presents the opportunity for substantial savings in transcript fee costs. Transcripts in Kentucky now cost the Commonwealth \$2.00 per page for an original and one copy; and transcripts cost private parties a recommended amount of \$2.80 per page for an original and one copy, and fees can exceed the recommended amount. By way of contrast, the Director of the Administrative Office of the Courts has calculated that transcripts from videotape cost only 99¢ per page for an original and one copy (or only about one-third the recommended fee for private parties).

If no transcript whatsoever is needed for appellate review, then transcript fees are eliminated altogether as an item of cost. While there would be a nominal cost associated with provision of duplicate videotapes for parties or an appellate court, that cost is only a tiny fraction of the cost of a transcript at current court reporter fee rates.

3. Appellate record review. For each of the alternatives but one, appellate review of the record involves perusal of a transcript. Cost scores are thus low and identical for all alternatives except that in which the videotape record is itself the record on review, without being transcribed.

In videotape experiments for both Columbus, Ohio, and Chattanooga, Tennessee, conducted in the mid-1970's, appellate judges experienced such difficulty with having to review videotapes instead of transcripts that those experiments were discontinued. (See above, Chapter I.) Yet there have been significant advances in videotape technology since then, and it is unlikely that appellate judges in Kentucky will experience review problems at the level experienced a decade ago by their colleagues in the earlier experiments.

In the earlier experiments, appellate judges were dissatisfied with review of a videotape record because it took so much longer than review of a transcript. But the videotape mechanisms then available at reasonable cost did not permit a viewer to skip over less relevant parts of the record or to go back easily to an earlier point in the record. The present state of videotape technology, however, allows the viewer to go "fast forward" or "fast reverse" with ease.²⁷ With appellate counsel referring to the record in

27. In April 1985, the Chief Justice of the Kentucky Supreme Court appointed a special committee to draft rules governing cases on appeal in which the record consists only of the videotape of the proceedings below. It is anticipated that these rules will provide guidance for appellate counsel for such issues as specifying where in the record to find matters addressed in briefs. Telephone communication, from Don Cetrulo, Esq., Director, Administrative Office of the Courts, to David C. Steelman, National Center for State Courts, April 17, 1985.

appropriate fashion, and with an adequate log of the proceeding under review, indicating the points at which specific events (such as direct or cross-examination of a particular witness) began or ended, appellate judges reviewing a videotape record in Kentucky should be spared many of the problems experienced by their colleagues in the Columbus and Chattanooga experiments.

Despite such positive developments, it may take some time for procedures to be developed to ease record review by appellate judges. Some types of cases may not be considered suitable for review without a transcript. Because of these potential difficulties, the evaluators have given a comparatively high cost score for appellate record review (a "6", as opposed to the "2" given other alternatives) to videotape without transcription.

4. Facility changes. For a manual shorthand reporter, no particular changes of any sort need be made in order to allow the taking and transcription of the record. A machine shorthand reporter needs only an electrical outlet in the courtroom to permit the operation of his or her machine. The evaluators have thus given lowest possible cost scores to manual shorthand, machine shorthand, and per-diem reporting in terms of facility changes needed to support those methods of court reporting.

While computers once required special accommodations for the operation of large central processing units, advances in computer technology have meant that CAT systems can often operate without such special facilities requirements. CAT is thus given a facility cost score only slightly higher than that for the alternatives mentioned in the preceding paragraph.

Sound recording calls for more attention to acoustical

considerations in and around each courtroom. Courtrooms in newly-constructed or renovated courthouses may not present particular problems. But in addition to wiring changes that must often be made in older courtrooms, the effective use of sound recording may require the lowering of ceilings, installation of carpets, and development of means to minimize intrusive sounds from the hallways or streets outside the courtrooms.

Many of the acoustical considerations applicable to sound recording are also important for videotape systems, since videotape systems also make an audio record in much the same fashion as audio systems. In addition, there must be adequate lighting to permit cameras to make a visual record of events, although the evaluators observed that the cameras in Judge Higgins's courtroom in Louisville were able to make a suitable record of visual images even in low-light circumstances that would be inadequate for purposes of commercial broadcasting.

Installation of the videotape system in the Louisville courtroom used by Judge Higgins involved only modest facility changes, because the courthouse in Jefferson County is a relatively new structure. Because more extensive modifications may be needed for videotape in some of Kentucky's courthouses constructed in the nineteenth century, the evaluators have given both of the video alternatives cost scores for facility changes that are much higher than those for other options. It should be remembered, however, that facility changes do not usually have a large cost impact, so that the difference in weighted scores among the video alternatives and the other alternatives is not great.

5. Equipment. Just as the manual shorthand reporter needs

little in the way of facility changes, so also does he or she demand little in terms of expensive equipment. The machine shorthand reporter is also relatively inexpensive, with only a shorthand machine, and in Kentucky, reporters must provide and maintain their own shorthand machines. The evaluators have thus rated these two alternatives as having low costs in terms of equipment. The per-diem reporter option is also rated low, being given a score between those for manual and machine shorthand, since a freelance reporter may use either method to take the record.

The other alternatives are much more heavily dependent upon equipment, as their cost scores suggest. Sound recording, of course, involves the operation of multitrack audio devices, while CAT seeks to take advantage of the strengths of computers. Rated highest in terms of overall equipment cost are the two videotape alternatives, since they involve cameras, microphones, audio-video recorders and, in the sound mixing system patented by Jefferson Audio Video Systems, computers.

6. Supplies and storage. Each of the alternatives compared here has need of consumable supplies and of storage space. This is a relatively low-cost area, however, and differences in cost are small. Each alternative calls for the cost of procuring and storing the medium on which the original record of proceedings is entered, and (except for videotape without transcripts) each has need of paper and storage space for transcripts. In addition to paper tapes, CAT requires that there be magnetic tapes for entry of shorthand symbols at the same time as paper tapes are being made. While paper used to make or transcribe the record can be recycled for reuse, such a process is much more costly than that for

recycling and reuse of magnetic tapes.

C. Weighted Cost Ranking of Alternatives

Based on the raw scores assigned each alternative under the different cost criteria, multiplied by the weights given each criterion, it is possible to arrive at total weighted cost scores by adding up each alternative's weighted scores under the different cost criteria. The seven alternatives are ranked according to their respective total weighted scores in Table 3 below. The alternative at the top of the table is considered by the evaluators to be the most costly overall, while the alternative at the bottom of the table is considered the least expensive.

As the reader can see, machine shorthand with CAT emerges as the most expensive among the seven alternatives, with a total weighted cost score almost 10% higher than that for the next highest alternatives. Among the next five alternatives, however, there is very little cost difference in the judgment of the evaluators. Videotape, with or without transcription, is perceived to cost no more overall than machine shorthand and is only marginally more expensive overall than manual shorthand. Per-diem court reporting is clearly the least expensive of the alternatives.

For the most part, however, the reader can see that the evaluators consider there to be only small real cost differences among all seven of these alternatives. For purposes of distinguishing further among them, it is necessary to turn to the benefits that can be expected from each option.

TABLE 3.
COST RATINGS OF SEVEN COURT REPORTING ALTERNATIVES

<u>Court Reporting Alternative</u>	<u>Cost Score*</u>
Machine shorthand by an Official Court Reporter (OCR), with court-provided computer-aided transcription (CAT)	133
OCR machine shorthand, with transcription by typing or dictation	123
Videotape, without transcription	123
Videotape, with transcription by typing	121
Sound recording by a court employee, with transcription by typing	120
OCR manual shorthand, with transcription by typing or dictation	118
Per-diem reporting, with record made and transcribed by any means	100

*As set forth above, the alternative with the highest "cost score" is the most expensive of those compared.

CHAPTER IV

BENEFIT COMPARISON OF SEVEN ALTERNATIVES

While cost is a paramount consideration in the comparison of videotape with other court reporting alternatives, such a comparison must also weigh the performance of each alternative in terms of benefits to be expected from each reporting method. In their visit to Louisville, the National Center evaluators identified and discussed a number of benefit criteria with Judge Higgins, Mr. Cetrulo, Mr. Campbell, and Mr. Green. Arranged according to whether they involve the making of the record, transcription of the record, or general considerations, the different benefit criteria used for this evaluation are set forth in Table 4 on the following page.

A. Weighted Benefit Criteria

Not all of these benefit criteria are of equal significance, however. Therefore, the evaluators have assigned weights to the different criteria, just as they have done with the cost criteria. The benefit criteria considered most important have been assigned weights of "10", while those of less significance have been given lower weights. Before comparing the seven alternative court reporting techniques, it is helpful to explain the different criteria and the weights they have been assigned.

1. Record accuracy. For purposes of subsequent review, it is of paramount importance that the record made of trial-court proceedings be as accurate as possible. This criterion is thus given a "10", the highest weight possible under the system used here.

2. Recorder reliability. Under any court reporting system, it

TABLE 4.
COURT REPORTING BENEFIT CRITERIA

<u>Benefit Criterion</u>	<u>Weight</u>
<u>Making the Record</u>	
Accuracy of the record made of trial court proceedings	10
Reliability of the recording device or operator: vulnerability to breakdown	5
Obtrusiveness in courtroom proceedings	1
<u>Transcribing the Record</u>	
Accuracy of the transcript or other reproduction of the record made for review	10
Timeliness of transcription or other reproduction of the record	8
Ease with which appellate judges and others can review the record	8
Degree to which the transcription process must rely on the in-court operator of the recording device	3
<u>General Considerations</u>	
Policy flexibility: the ease with which the reporting method can be abandoned if the court changes policy	5
Capacity for enhancement and integration with other technologies	6
Suitability for educational purposes	3
Productivity: contribution to efficient court management while concurrently meeting court reporting demands	5

*The "weight" of a benefit criterion has to do with its relative importance by comparison to other benefit criteria. A criterion with a weight from "8" to "10" is very important; from "4" to "7", important; and from "1" to "3", less important. These weights have been assigned by the evaluators, subject to review and adjustment by Kentucky court leaders participating in this evaluation.

is possible that the means for making the record will break down. A person who does manual or machine shorthand reporting needs a break from time to time from courtroom proceedings to avoid being overcome by fatigue and the demands of keeping a verbatim record. In an analogous fashion, any mechanical or electronic equipment employed for making the record-- whether it is a shorthand machine, an audio device, a camera, a microphone, or a computer-- is subject to potential breakdown. While this criterion is important, it is not so important as the first criterion, since a reporter or a machine can be replaced if there is a breakdown. The evaluators have consequently given this criterion a weight of "5".

3. Obtrusiveness. While the making of a record is considered essential to subsequent review of a trial court proceeding, the presence in the trial courtroom of the means by which that record is to be made has an inevitable effect on the participants in the proceeding. To the extent that the presence of one court reporting method is more obtrusive and has a more negative effect on the proceeding than an alternative court reporting method, then the more obtrusive alternative is less desirable and should receive a lower benefit score. Because of the need for making a record of proceedings, this criterion is given a weight of only "1".

4. Transcript accuracy. Because the process of transcribing the record is one that occurs separate and apart from the initial creation of that record, there is a possibility that error will be introduced in a transcript even though the contemporaneous record constitutes a faithful rendition of what happened in the proceedings being recorded. Just as the contemporaneous record made of a trial proceeding must be as accurate as possible, so too must the

transcribed version of that record be accurate. This criterion is thus given a weight of "10", the same as that for record accuracy.

5. Transcript timeliness. In order for there to be prompt justice on appeal, the transcript of the record of proceedings in the trial court must be made available as quickly as possible. Also, the ability of the trial court and of trial counsel to review a day's trial proceedings in preparation for those on the following day depends upon the ability of those providing court reporting services to make "daily copy" available. This criterion is thus one of considerable importance. Yet it is not as important as the accuracy of the original or transcribed record, and the evaluators have accordingly given it a weight of "8".

6. Ease of review. Whether the record medium be paper, magnetic audio tape, or magnetic audio-video tape, efficient review of the record by court, counsel or a party requires that the record be in a form suitable to that end. Given the relative importance of this consideration, the evaluators have given this criterion a weight of "8".

7. Dependence on in-court operator for transcription. To the extent that preparation of a transcript requires participation of the person who made the in-court record, that person is not available to be in the courtroom making the record of other proceedings. Moreover, the fact that some court reporting methods involve use of coded symbols that may be intelligible only to the in-court person making the record means that transcription may be impossible (or at least very difficult) if the in-court person is unavailable. This criterion has been assigned a weight of "3" by the evaluators because problems are in fact relatively infrequent in

this area.

8. Policy flexibility. This criterion addresses the degree of ease with which a court system could move from one court reporting method to another considered more desirable. To the extent that any alternative requires a heavy commitment from the court system, which might later impede its ability to adopt another alternative, then the incumbent alternative should be considered less desirable because of its impact on policy flexibility. The evaluators have assigned a "5" to this criterion.

9. Enhancement capacity. In an era (such as the present time) that is experiencing a flurry of technological innovations, it is a virtue for any court reporting alternative to have the capacity for subsequent enhanced performance or for integration with other technological developments for improved efficiency. This criterion is given a weight of "6" by the evaluators.

10. Suitability for education. Given the ongoing changes in society and technology confronting the judicial process, there is a continuing need among judges, lawyers, court personnel, and citizens for educational opportunities about the courts. Any court reporting method that contributes to such opportunities should thus be considered beneficial in this respect. Because this is just a secondary issue in court reporting, however, this criterion is given a "3" weight.

11. Productivity. A court reporting method that contributes to enhanced productivity is naturally beneficial in terms of overall management of the courts. Balancing the importance of productivity against the fact that a contribution to productivity is only a byproduct of any court reporting method, the evaluators give this

criterion "5" as a weight.

B. Benefit Scores

Given the relative importance of the different benefit criteria discussed above, it is now possible to compare the seven different alternatives in terms of those criteria. To show the judgment of the evaluators as to relative benefits, each alternative has been given a raw score ranging from "1" (to indicate a low-benefit alternative) to "10" (to show a very high-benefit alternative) for each benefit criterion. Each alternative's raw score for each criterion is then multiplied by the weight assigned to that criterion, to yield a weighted benefit score for each alternative under every criterion. Table 5 below shows the relative benefit scores for the seven alternatives compared here. Set forth below are the considerations addressed by the evaluators in assigning benefit scores to the different alternatives under each benefit criterion.

1. Record accuracy. Under this criterion, which involves the extent to which it is possible with different court reporting techniques to approach the goal of always making a complete verbatim record of trial proceedings, none of the alternatives compared here is given a poor score. Yet it must be recognized that human limitations make total and consistent accuracy almost impossible to achieve with manual or machine shorthand techniques, so that these alternatives are given a raw score of "6". The CAT alternative is given the same score as machine shorthand because it is no different with regard to the creation of the record. Because freelance reporters may not cover court proceedings on a daily basis, the

per-diem reporter alternative is given a slightly lower raw score.²⁸

Sound recording is given a raw score of "7" because the audio record gives not only the words that were expressed, but also permits one listening to the tape to hear the cadence and tone of the speaker (which might give an utterance a different meaning than what would appear in a transcribed record). Experience in some jurisdictions with "inaudibles" in an audio record²⁹ are not a function of the sound recording device: more often, they are the result of "people problems"-- that is, they are consequences that could be avoided by greater attention to preservation of the record by the trial judge, the lawyers, and the sound recording monitor.

The highest scores under this criterion are given to the two videotape alternatives. In addition to making a sound record of what is said, a videotape record allows the record reviewer to observe the demeanor of the speaker. The most complete record is thus made by a videotape system.

2. Recorder reliability. To rate the different alternatives under this criterion, the evaluators must make a judgment about whether a machine like a sound recording device or a camera is more

28. Some manual or machine shorthand reporters might assert to a nonreporter that their training makes them able consistently to record every word in a trial proceeding. Judges and lawyers with experience reviewing transcripts of proceedings in which they participated might not all agree with such an assertion, however. What is more, shorthand reporters among themselves are sometimes willing to admit that they occasionally miss some parts of proceedings. See, for example, J. Varallo, "Reading Back What You Didn't Get," National Shorthand Reporter (April 1976) 14.

29. Experience in New Jersey courts with audio records is discussed in D. Steelman, et al., Court Reporting Services in New Jersey, pp. 98-99 (North Andover, MA: National Center for State Courts, 1978).

TABLE 5.
RELATIVE BENEFIT SCORES FOR SEVEN COURT REPORTING ALTERNATIVES

Benefit Criteria	Weight**	Raw/Weighted Score for Each Alternative*						
		Manual	Shorthand Steno	CAT	Audio	Per Diem	Video*** with	w/o
Record Accuracy	(10)	6/60	6/60	6/60	7/70	5/50	9/90	9/90
Reliability	(5)	5/25	5/25	5/25	6/30	5/25	6/30	6/30
Obtrusiveness	(1)	5/5	5/5	5/5	5/5	5/5	6/6	6/6
Trans. Accuracy	(10)	6/60	6/60	6/60	7/70	5/50	8/80	9/90
Timeliness	(8)	6/48	6/48	8/64	6/48	6/48	6/48	9/72
Review Ease	(8)	7/56	7/56	7/56	8/64	7/56	9/72	6/48
Rptr. Dependence	(3)	4/12	4/12	7/21	8/24	4/12	8/24	9/27
Flexibility	(5)	7/35	7/35	3/15	4/20	9/45	4/20	4/20
Enhancement	(6)	3/18	3/18	9/54	4/24	3/18	9/54	9/54
Education	(3)	2/6	2/6	2/6	7/21	2/6	9/27	9/27
Productivity	(5)	6/30	6/30	9/45	7/35	4/20	9/45	9/45
Total Weighted Scores		355	355	411	411	335	496	509

*The "raw" score for an alternative indicates whether its advantages in a benefit area are high, moderate or low by comparison to other alternatives; thus, a high-benefit alternative receives a "9", while a low-benefit alternative receives a "1". The "weighted" score is the result of multiplying the raw score by the weight assigned the benefit criterion.

**The "weight" of a benefit criterion has to do with its relative importance by comparison to other benefit criteria. A criterion with a weight of "3" is very important; "2", important; and "1", less important. These weights have been assigned by the evaluators, subject to review and adjustment by Kentucky court leaders participating in this evaluation.

*** "Video with" refers to videotape with transcription, in which the record on review has been transcribed from videotape; "Video w/o" means videotape without transcription, in which the record on review is the original videotape record.

reliable and less vulnerable to breakdown than a human being making a manual shorthand record or a human being with a shorthand machine. In view of the fact that human beings are far more valuable than machines, and since one machine may easily be substituted for another, it is easier to replace a machine that has broken down. For this reason, the evaluators give the sound recording and videotape alternatives a slightly higher benefit score for this criterion.

3. Obtrusiveness. For this criterion, the evaluators have given equal scores to all of the options except the two videotape alternatives, which they have given a slightly higher score. This outcome may be somewhat surprising to the reader, because commercial television coverage of a trial, complete with camera operators and television lighting, is generally considered very intrusive by comparison to the presence of a court reporter or sound recording monitor to make the record.

Based on their observation of the videotape system in the Louisville courtroom of Judge Higgins, however, the evaluators conclude that the cameras there are so unobtrusive that participants in courtroom proceedings quickly lose awareness of their presence. One viewing videotape records of activities in Judge Higgins's courtroom soon observes that, because the cameras are fixed on the wall like the cameras in the lobby of a bank, and because there is no light in the front of each camera that switches on to show that its picture is now being recorded, the participants in proceedings take no notice of the cameras. For this reason, the cameras in the Judge Higgins courtroom are even less obtrusive than a court reporter or sound recording monitor would be in the courtroom.

4. Transcript accuracy. This is the second benefit criterion that, in addition to record accuracy, is assigned a weight of "10". It is also the subject of heated debate between advocates of machine shorthand and proponents of audio recording.³⁰ Based on a review of the literature reporting on efforts to compare transcripts prepared under different court reporting systems, the evaluators conclude that, given appropriate conditions, the paper transcripts prepared under different systems are all likely to be reasonably accurate.

Per-diem reporters are given a slightly lower score for transcript accuracy because they may not be preparing transcripts of court proceedings on a regular basis. Transcript accuracy with audio is given a higher score because the reviewer can check the accuracy of a transcript by reference to the audio tape.

30. See Sacramento Superior Court, A Study of Court Reporting: A Feasibility Study of Alternate Methods of Preparing Court Transcripts. An Analysis of Electronic Sound Recording (1973), where it was concluded that sound recording permits more accurate transcripts than machine shorthand. The methodology and conclusions of this study were attacked by the National Shorthand Reporters Association, however, in Rebuttal to Sacramento Study of Court Reporting (1975). [The National Shorthand Reporters Association has also criticized the Alaska court system's decision to employ only sound recording in its trial court: see National Shorthand Reporters Association, A Financial Analysis of Electronic Reporting in Alaska (undated)].

More recently, the Federal Judicial Center conducted a study comparing transcription from machine shorthand with that from sound recording, concluding that sound recording permits accurate transcription at lower cost than machine shorthand. J. Greenwood, et al., A Comparative Evaluation of Stenographic and Audiotape Methods for United States District Court Reporting (Washington, DC: Federal Judicial Center, 1983). The methodology and conclusions of this study were also criticized. Resource Planning Corporation, An Analysis of the Federal Judicial Center's Evaluation of Stenographic and Audiotape Methods for United States District Court Reporting, prepared for the National Shorthand Reporters Association and the United States Court Reporters Association (Washington, DC, 1983).

Transcripts from videotape are rated higher still, because reference can be made not only to the sound record, but to the visual record as well. The highest score for accuracy, however, is given to the alternative in which no transcript is made: in a case where the record on appeal as the original videotape of the trial, the reviewer avoids the risk of transcription error altogether and is able to review the most comprehensive record among the options compared here.

5. Transcript timeliness. The evaluators conclude that, with appropriate management, all of the alternatives here permit reasonably prompt transcription. The four alternatives under which more traditional transcription methods are employed-- typing from paper shorthand, dictation tapes, or audio tapes-- are all given a "6" rating. The same rating is also given to transcript typing from from a videotape, because the transcription experience to date with videotapes in Kentucky has been that a capable typist takes only 75 minutes to transcribe every 60 minutes of videotaped proceedings.³¹

31. Oral communication to the evaluators from Don Cetrulo, Esq., Director, Administrative Office of the Courts, March 21, 1985. This contrasts sharply with the experience of those involved in the videotape experiment in Columbus, Ohio, where it was found that the person preparing transcripts from videotape could prepare only 25 pages per day. (See above, Chapter I, footnote 11 and associated text.) One likely explanation for the difference between the Kentucky experience to date and the earlier Columbus experience is that videotape technology now permits typists to stop videotape, move it backward, or move it forward, while this was not so easily done a decade ago. Another difference may be that those typing transcripts in Kentucky are more experienced than those in Columbus.

In a comment on the Columbus experiment (see Chapter I, note 11 and related text), the National Shorthand Reporters Association asserted that shorthand reporters commonly prepare 125-150 pages of transcript per day, as compared to the 25 pages per day prepared from videotape in Columbus. While court reporters are undoubtedly capable of high transcript productivity, staff members from the National Center for State Courts have observed that actual

For two alternatives, higher transcript timeliness scores are given. Because CAT provides a computerized first draft of a transcript, it can shorten transcript preparation time dramatically, assuming that operational and management problems in the court environment can be overcome.³² The highest score for transcript timeliness is given to the videotape without transcription alternative, which avoids transcript preparation delay altogether.

6. Ease of review. This criterion is the mirror image, in benefit terms, of the cost criterion addressing appellate transcript review. Transcripts prepared by manual shorthand, machine shorthand, CAT, and per-diem reporters are all easily reviewed.

(footnote 31 continued) transcript productivity by reporters is usually much lower. See, for example, D. Steelman, et al., Court Reporting Services in New Jersey (North Andover, MA, 1978). At the time of that study, many New Jersey reporters were unable to meet the state court system's productivity standard of 600 transcript pages per month (or about 20 pages per day, including weekends). In Connecticut from 1972 through 1976, court reporters were found to prepare an average of only 3-5 pages of transcript per day. D. Steelman, et al., Transcripts by Connecticut Court Reporters, p. 26 (North Andover, MA, 1978). In selected Maryland counties in 1974 and 1975, average transcript productivity was not more than 8 pages per day. See A. Aikman, et al., Court Reporting Services in Maryland, p. 67 (Williamsburg, VA, 1976). For South Dakota, the National Center suggested a productivity standard of from 500 to 750 pages per month (or from 16 to 25 pages per day, including weekends), which would exceed the average 1976 transcript productivity of many reporters in the state. See F. Bremson, et al., Court Reporting Services in South Dakota, pp. 33-39 (St. Paul, MN, 1977).

32. According to the Director of the Administrative Office of the Courts, problems with the Fayette County Circuit Court CAT system in Lexington, Kentucky, have prevented its effective operation. In a national study of CAT, the National Center found that, of eleven court jurisdictions in which employment of CAT was studied, only one court had been able to achieve a cost-effective operation, and then only after substantial changes were made in the practices of court reporters using the system. R. Delaplain, et al., "Computer-Aided Transcription Analysis Project," National Center for State Courts Report (March 1981).

Each of these alternatives is thus given a score of "7". For the reasons discussed above under costs, an untranscribed videotape record is given a lower score for review ease. The highest scores are given to transcripts from audio and from videotape, because reviewers are able to augment their review of the transcript with that of the audio or audio-video record.

7. Dependence on in-court operator for transcription.

Transcription from manual or machine shorthand (whether by an official court reporter or a per-diem reporter) must usually involve the person who made the in-court record, since each reporter may develop shorthand symbols that are unintelligible to anyone else. This sometimes creates problems, as when a reporter is ill, leaves the jurisdiction, or dies. For these reasons, the evaluators have given lower benefit scores for this criterion to manual shorthand, machine shorthand, and per-diem reporting.

A much higher score is given to CAT, however, since such a system requires that each reporter using it provide the computer with a "dictionary" enabling the computer to translate the reporter's shorthand symbols into the first draft of a transcript. Audio recording and videotape with transcription get even higher scores, because these alternatives do not depend at all upon the in-court reporter for transcription: anyone who can hear can transcribe from audio or audio-video tapes. The highest score of all is given to videotape without transcription, however, since this alternative does not depend on a transcribed record at all for appellate review.

8. Policy flexibility. Any court reporting alternative without a high capital investment in equipment gives the courts a relatively

high degree of policy flexibility. Thus, manual shorthand and machine shorthand by official court reporters have each been given a score of "7", and per-diem reporting has been given a score of "9". Sound recording and the two videotape alternatives would be likely to restrict the court system's flexibility more in regard to court reporting, so they are given much lower scores. The lowest score, however, is given to CAT, which combines the cost of reporter salaries and fees with the cost of computers, and would probably "lock in" the court systems adopting it, creating great difficulty in shifting to another court reporting mode.

9. Enhancement capacity. Because they offer little opportunity for enhancement and integration with other technologies, manual shorthand, machine shorthand, and per-diem reporting are given low benefit scores under this criterion. The prospects for audio recording are little better, so that its benefit score is only slightly higher.

CAT, on the other hand, has enormous potential in this area, and it is given a very high score. As is shown in the "Courtroom of the Future" demonstration project in Detroit, Michigan (co-sponsored by the Wayne County Court System and the National Shorthand Reporters Association), CAT permits the integration of considerable computer technology into ongoing trial proceedings.³³ In this system, judges and counsel have computers at their respective locations in the courtroom, by which they can instantly call up previous testimony recorded on CAT-compatible shorthand machines. CAT also

33. See "Courtroom of the Future Opens in Detroit," 11 N.H. Law Weekly 482 (March 6, 1985).

permits hearing-impaired litigants to read the court dialogue only seconds after it has been spoken. Perhaps most importantly, the CAT system in the courtroom permits the court reporter to isolate important case status data for use in court management: called "Courtroom Administration Data Input" (CADI), this capability not only provides information for court management, but also makes it possible for the court reporter to enter the data otherwise captured and reported by an in-court or "minute" clerk.³⁴

The videotape alternatives also receive very high scores under this criterion. In the Louisville courtroom where Judge Higgins uses videotape to record proceedings before him, no court support personnel need be present. The system has the potential to allow court security personnel in a central location outside the courtroom to monitor proceedings simultaneously in several courtrooms, and to respond if an emergency situation arises in any of them. By means of a monitor located outside the courtroom, reporters from news media can observe courtroom proceedings.³⁵ Moreover, an unruly criminal defendant who has been ordered from the courtroom under Illinois v. Allen³⁶ can observe courtroom proceedings from a

34. See National Shorthand Reporters Association, "Courtroom Administrative Data Input (CADI)" (Vienna, VA: March 1984).

35. It appears likely that the cameras used in the Louisville courtroom might not be of sufficient quality for commercial television broadcasts, since cameras in the \$15-30,000 cost range must be used to achieve broadcast quality. In a large multijudge trial court, consideration might be given to having one courtroom equipped with commercial quality cameras, and to hold proceedings with public notoriety in that courtroom. In Kansas, a local broadcasters' association helped to underwrite the cost of installing commercial quality cameras in one courtroom.

36. 397 U.S. 337, 90 S.Ct. 1057, 25 L.Ed.2d 353 (1970).

secure location outside the courtroom.

Videotape depositions can be presented on a monitor in the courtroom for jurors and simultaneously made part of the videotape record of proceedings. By the use of closed-circuit television (CCTV), the court can receive the testimony of expert witnesses from hospitals, chemical laboratories, or elsewhere. In a system such as that employed by Judge Higgins in Louisville, child witnesses in sexual abuse cases can testify from the judge's chambers and be observed in the courtroom by jurors and the defendant.³⁷

10. Suitability for education. Four of the alternatives considered here-- manual shorthand, machine shorthand, CAT, and per-diem reporting-- have been rated very low in terms of this criterion. While court reporters may be well qualified to give speeches and lectures about particular aspects of court proceedings, they are made no more qualified by their method of court reporting. Sound recording, on the other hand, can provide audio tapes of court proceedings that can easily be used for educational purposes.

But the videotape alternatives have the greatest potential for service to educational activities. In addition to providing the record for appellate review, videotapes can be used for orientation of new judges and continuing education of more experienced judges. Lawyers can employ them not only in bar-sponsored educational

37. See Conti, "In-Court Personnel." See also, State v. Shepherd, 197 N.J.Super. 411, ___ A.2d ___ (1984), where out-of-court CCTV testimony by a child witness was held by an intermediate appellate court not to violate the defendant's constitutional right to confront opposing witnesses. But see Hochheiser v. Supreme Court, 161 Cal.App.3d 777, 208 Cal.Rptr. 273 (1984), where an intermediate appellate court held that it was not within the trial court's inherent powers to permit such testimony.

programs, but also to critique and sharpen their own courtroom techniques. They can be used in law schools, colleges, and in public forums for citizens, to show the actual operation of the courts in specific cases.

11. Productivity. While manual and machine shorthand by official court reporters are alternatives that have some potential for productivity enhancement, the use of per-diem reporters does not lend itself so easily to this purpose. Audio sound recording, on the other hand, has greater potential for productivity enhancement, particularly in systems where one technician monitors audio devices for several courtrooms, thereby freeing court personnel from in-court responsibilities. The greatest potential for productivity enhancement, however, is evidenced by CAT, through its integration with CADI (see above, 9. Enhancement capacity) to reduce the number of court personnel needed in court, and by the videotape alternatives, by means of which the courts can do away altogether with the need for court support personnel in each courtroom with the judge.

C. Weighted Benefit Ranking of Alternatives

Based on the raw scores assigned each alternative under the different benefit criteria, multiplied by the weights given each criterion, it is possible to arrive at total weighted benefit scores by adding up each alternative's weighted scores under the different benefit criteria. The seven alternatives are ranked according to their respective total weighted scores in Table 6 below. The alternative at the top of the table is considered by the evaluators to return the greatest benefits overall, while the alternative at

the bottom of the table is considered the least beneficial.

As Table 6 shows, the evaluators consider videotape without transcription to provide the most benefits, although videotape with transcription is not far behind. Videotape without transcription owes its high rating to its high scores for record and transcript accuracy, timeliness of record availability for review, potential educational value, potential for enhancement, potential contribution to productivity, and low dependence on an in-court reporter for making the record available for review. Most of these positive qualities are possessed by videotape with transcription, which scores higher for ease of record review.

Ranked in the middle are sound recording (audio) and CAT, which the evaluators have given identical overall benefit scores considerably below those for the videotape alternatives. Audio and CAT seldom had identical scores under any given benefit criterion; but each fared reasonably well under most criteria.

Kentucky's three current court reporting methods rank at the bottom of the list. Manual shorthand and machine shorthand are considered indistinguishable under the different benefit criteria by the evaluators. The least beneficial of all the alternatives is per-diem reporting, which was given comparatively low benefit scores under most criteria other than policy flexibility.

TABLE 6.
BENEFIT RATINGS OF SEVEN COURT REPORTING ALTERNATIVES

<u>Court Reporting Alternative</u>	<u>Benefit Score*</u>
Videotape, without transcription	509
Videotape, with transcription by typing	496
Sound recording, with transcription by typing	411
Machine shorthand by an Official Court Reporter (OCR), with court-provided computer-aided transcription (CAT)	411
OCR manual shorthand, with transcription by typing or dictation	355
OCR machine shorthand, with transcription by typing or dictation	355
Per-diem reporting, with record made and transcribed by any means	335

*As set forth above, the alternative with the highest "benefit score" is the one judged to have the greatest benefits by comparison to the other alternatives.

CHAPTER V.

COST-BENEFIT CONCLUSIONS

In the preceding chapters of this report, the seven court reporting alternatives under consideration have been compared first in terms of relative costs and then in regard to benefits returned. Computer-aided transcription (CAT) is the most costly of the alternatives, while use of per-diem reporters is the least costly. When the alternatives are compared for benefits, videotape without transcription has the most advantages, while OCR machine shorthand (without CAT), OCR manual shorthand, and per-diem reporting rank together with the fewest advantages. What remains is to draw a relationship between costs and benefits.

The basic premise of any cost-benefit comparison among different alternatives is that, in the abstract, the "best" option is the one giving greatest possible results for the lowest possible cost. As a practical matter, the option giving highest benefits is often among the more costly alternatives (in keeping with the common-sense notion that "you get what you pay for"). As a result, decisionmakers must often decide whether to pay more for improved results or to give up some benefits in favor of cost savings.

The method employed here for relating costs to benefits is to divide the "cost score" (see Table 3) for each alternative into its "benefit score" (see Table 6), and to multiply the result by 100 in order to highlight differences. Table 7 presents the cost-benefit scores derived for each of the different alternatives, ranking the court reporting alternative with the highest score first.

As Table 7 shows, the evaluators find videotape without

TABLE 7.
COST-BENEFIT RATINGS OF SEVEN COURT REPORTING ALTERNATIVES

Court Reporting Alternative	Cost Score	Benefit Score	Cost- Benefit Score*
Videotape, without transcription	123	509	413.8
Videotape, with transcription by typing	121	496	409.9
Sound recording by court employees, with transcription by typing	120	411	342.5
Per-diem reporting, with record made and transcribed by any means	100	335	335.0
OCR machine shorthand, with court-provided computer-aided transcription (CAT)	133	411	309.0
Manual shorthand by Official Court Reporter (OCR), with transcription by typing or dictation	118	355	300.8
OCR machine shorthand, with transcription by typing or dictation	123	355	288.6

*The "cost-benefit score" shown here for each alternative was calculated by dividing its "cost score" (see Table 3) into its "benefit score" (see Table 6), and then multiplying the result by 100.

transcription to be far and away the best of the alternatives. Videotape with transcription also compares well, with a score only slightly lower than that for video without transcription.

Ranking considerably below these alternatives are two middle-range options, sound recording (audio) and per-diem reporting. Audio's overall performance is primarily a result of its generally strong benefit score, since its overall cost score ranks with several other alternatives. Per-diem reporting, on the other hand, does reasonably well because of its lower costs, since it is considered by the evaluators to return the fewest benefits among the alternatives compared.

Despite its relatively high benefits, CAT is not considered a strong alternative because of its high overall costs. With mediocre benefit scores and mid-range costs, manual shorthand and machine shorthand are considered the least attractive of the alternatives from an overall cost-benefit perspective.