PHILJIM, THE PHILADELPHIA JUSTICE IMPROVEMENT MODEL

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INTRODUCTION

This paper discusses the background and development of a general computer model for the simulation of total state and metropolitan criminal justice systems – from initial police processing, through court procedures with various release and detention options for defendants, to correctional dispositions and referral alternatives.

Entitling the model PHILJIM recognizes that its principal development was accomplished in work undertaken for the Philadelphia Regional Planning Council, the body which allocates Law Enforcement Assistance Administration (LEAA) funds for the City of Philadelphia. PHILJIM was developed as one part of a comprehensive criminal justice planning process; the model should be viewed as one significant management technique that can be employed in deciding how both LEAA and general fund revenues may be spent to improve criminal justice systems. Certain refinements in the PHILJIM model have been made as part of work undertaken for the Division of Corrections of the State of Alaska.

For most public officials the notion of a simulation model is an abstraction. Therefore, the bulk of this paper is a fifty-six page Philadelphia/Alaska Sample output which is completely annotated to explain the characteristics, dimensions and options available in the PHILJIM model; concepts, data, and modelling decisions from both Philadelphia and Alaska outputs are combined in this illustration. The Philadelphia/Alaska output contains both an indication of how the sample criminal justice system is now performing – which is termed a *base case,* and an indication of its performance after several changes are made – an *alternative plan* which includes additional judges, a District Attorney arrest screening project, and the creation of an Alcoholic/Drug referral unit. The structure of the sample criminal justice system is shown in the flow diagram; the effect of the project changes are analyzed in a comparison of several key indicators of the performance of the system.

USES AND BENEFITS OF SIMULATION

Experience with the development and application of PHILJIM suggests three principal benefits to governmental officials responsible for operations and planning: (1) a model permits a thorough understanding of the present status and performance of any criminal justice system; (2) the simulation effort leads to a comprehensive diagnosis of the problems that confront the CJ system; and (3) the operational model enables key officials to experiment with changes in criminal justice procedures and resource allocations designed to improve the system, without actually changing it.

Obtaining an understanding of the status and performance of state and local criminal justice systems has been a hard task for those involved in LEAA planning. Incompatible data from separate agencies, statistics that focus on physically and jurisdictionally distinct operations, and the absence of information systems designed to support simulation models used in comprehensive planning, have made it difficult to comprehend what is happening to cases and defendants. A model such as PHILJIM can have considerable value in resolving some of these problems: first, it provides a common structure (the flow diagram with its processing stages and branches) for data gathering on operation and performance of the criminal justice system under study; it shows the processing of cases and defendants by whatever crime detail is initially available in criminal justice agency reports; it shows the existing use of manpower and other resources and the total cost of the system; finally, a flow diagram and model can guide the development of information systems to support planning by defining the data elements and key indicators which will be used to evaluate the performance of the pertinent criminal justice system. Such results occurred in both the Philadelphia and Alaska experiences. In Philadelphia, the process of developing the system representation led to resolution of several mis-

understandings among judges as to adult and juvenile case processing and dispositional alternatives. In Alaska, the process of representation development resulted in the realization that, in effect, five separate systems were operating that could only partially be defined by geography.

With the output from the simulation model – even in its earliest development with serious problems of data availability and reliability – planners can diagnose and recognize priority problems that confront the CJ system. Deficiencies, bottlenecks, delays, operational problems, procedural problems and resource needs become more apparent. The interactions and linkages in the loosely structured and poorly defined entity called a criminal justice system are more visible, and thus more susceptible to improvement.

Most important in terms of payoff for the considerable time, effort and expense that is required to develop an operational simulation model is the ability to test alternative ways of doing things. The model provides a planning tool for evaluating proposed changes, such as LEAA projects, on the operations of the system; changes in procedures, the effect which additional personnel and facilities in one part of the system may have on downstream agencies and operations, and the resources required to achieve defined objectives and standards agreed upon by policy-making officials can be analyzed.

The three major benefits of modelling and simulation efforts tend to occur in chronological sequence as criminal justice research and planning agencies mature in analytical and political sophistication.

BACKGROUND ON THE SYSTEMS CONCEPT OF THE PHILJIM SIMULATION MODEL

The PHILJIM program is an adaptation and refinement of several concepts developed by Alfred Blumstein and Jacob Belkin of Carnegie-Mellon University. The Blumstein-Belkin model called JUSSIM for Justice Simulation is a steady-state linear model which treats the criminal justice system as a series of processing stages through which cases flow. From each processing stage there are various paths which a case can take; the proportion following these paths are termed branching ratios. Each processing stage has workload measures associated with the manpower and other resources available for processing cases at each stage. The total cost for a stage is the personnel cost plus other non-salary costs which vary with workload. Because the costs and workload for each processing stage will vary with the type of offense, groupings of crime types are employed.

Starting with JUSSIM as a base, substantial features and improvements were added to respond to the needs of the City of Philadelphia and the State of Alaska where PHILJIM has been implemented. These refinements in the computer program were a direct response to the planning needs of these jurisdictions. Two examples of modifications incorporated in the PHILJIM program will illustrate.

The initial JUSSIM program treated each processing stage in a criminal justice system as one where all flows coming into that stage were processed and the manpower and other resources required were computed – compute resources stage. Early in the experience with Philadelphia it became clear that many operating and planning officials preferred to see the precise number of manpower they knew to be available – whether police detectives, judges, or probation officers – and to compute either the backlog or workload in terms of the cases and/or offenders available for processing. Thus, when the PHILJIM program was written, it incorporated four options which officials could use in setting up the simulation model:

- a stage where all flow is processed and the manpower resources required are computed (*Compute resources*); as an example, see the Police Arrest/Apprehension stage on p. 11 of the sample output
- a stage where all flows are processed, the available resources are read in, and the workloads per case are computed (*Compute Workload*); as an example see the Probation/Parole stage on p. 26 of the sample output
- a stage where the capacity to process flow is compared with the flow of cases entering to determine how many cases are processed and the remaining backlog (*Compute Backlog*); as an example, see the Court Trial stage on p. 17 of the sample output
- a stage where only the caseflow is processed and no manpower or other costs are used (*Only Flow*); as an example, see the Court Sentencing stage on p. 21 of the sample output

Another modification grew out of the work with the Division of Corrections of the State of Alaska. The basic JUSSIM program requires that the flow from all the branching ratios at a stage must equal the total flow entering which means that the branching ratios must sum to 1.0. Where an agency is concerned with detention stages, it becomes necessary to be able to separate the case from the defendant flow. Thus, PHILJIM provides a case-people split; branches are coded as carrying cases or people, and branching ratios and flows are computed for a stage's case and people branches separately.

The total range of options available in the PHILJIM program can only be understood by a page-by-page review of the sample output which

follows after a brief discussion of the approaches to entering criminal justice data into the model. The "running characteristics" of the PHILJIM model are incorporated in Appendix A.

PHILJIM INPUT DATA APPROACHES

Two types of data are input to PHILJIM: the structure of the criminal justice system being represented and its numerical values. The user describes the structure by inputting which crime types, crime groups, stages, branches, manpower, and cost types are to be used. With the structure so described, the user fills in the input flows, the branching ratios, the number of manpower available, average salaries, times required per case, costs per case, fixed costs, and so forth. Because the structure is input, PHILJIM is not specific to any criminal justice system and, therefore, may be tailored to any criminal justice system as desired.

PHILJIM allows many alternative ways of inputting data so as to (1) fit the data sources, (2) make the computer output understandable by matching how criminal justice personnel view their stages, and (3) support the phases of a planning process by representing stages and branches differently for different planning tasks over successive runs. Stages may be represented as compute resources required from required workloads per case or compute available workloads per case from available resources or compute flow able to be processed and backlogged flow from required workloads per case and available resources.

Manpower data may be input as variable or fixed manpower and may be input as manpower available or computed as manpower required. Non-salary costs may be variable or fixed and may be input as total costs or computed on a per case or per time unit basis. Workloads may be represented as manpower time per case or time duration a case spends in a stage. For time durations PHILJIM accepts or computes average populations in days or months. Branches may represent cases or defendant flows and ratios or actual flows may be input. Flows entering from outside the criminal justice system may occur at any stage.

Input data about proposed changes to the current criminal justice system, called the Base Case, uses the project concept. Projects may change any of the existing elements of Base Case stages: manpower, workloads, costs, etc., and projects may add new elements to the Base Case stages or add new stages and branches. Given a set of projects, the user forms alternative plans by directing PHILJIM to combine a list of projects with the Base Case. PHILJIM automatically re-structures the criminal justice system representation, adding stage, branches, manpower types, etc. Various alternative plans may be easily generated in the same or successive computer runs.

All the alternative ways PHILJIM models the elements of a criminal justice system are illustrated in the following sample printout. A comparison of the base case and alternative plan incorporated in the sample output follows the output. This analysis illustrates changes in such key indicators of criminal justice agency performance as (1) proportion of reported crimes dropped prior to Court Trial, (2) conviction rates at Court Trial, (3) average population of detentioners and sentenced prisoners, (4) court backlog, (5) probation officer caseload, and (6) overall and specific stage processing costs.

The Philadelphia/Alaska Sample printout is a small model constructed to display the features of PHILJIM. The Philadelphia/Alaska Sample has 7 stages and 10 crime types and the Base Case part of the output is 29 pages. One of the actual Philadelphia models developed (a complete run of 1970 data) has 119 pages of output in the Base Case – with 28 stages, 89 branches, 89 manpower types, 20 non-salary cost types, and 29 crime types.

THE INTEGRATION OF SIMULATION MODELS INTO COMPREHENSIVE CRIMINAL JUSTICE PLANNING SYSTEMS

Having presented the output of a fully operational and completely programmed simulation model, it is necessary to raise an important caveat. A simulation model will not alone define the changes to be made, by means of projects, in a total criminal justice system. The simulation model must be integrated into a total comprehensive planning system.

A planning system is a set of procedures, schedules, organizational roles or responsibilities, and computer models which permit an organization to arrive at a plan, either periodically or on an exception basis. A computer simulation model, a linear programming model, any OR model or statistical time series or econometric forecasting model can and should be embedded in a comprehensive planning system.

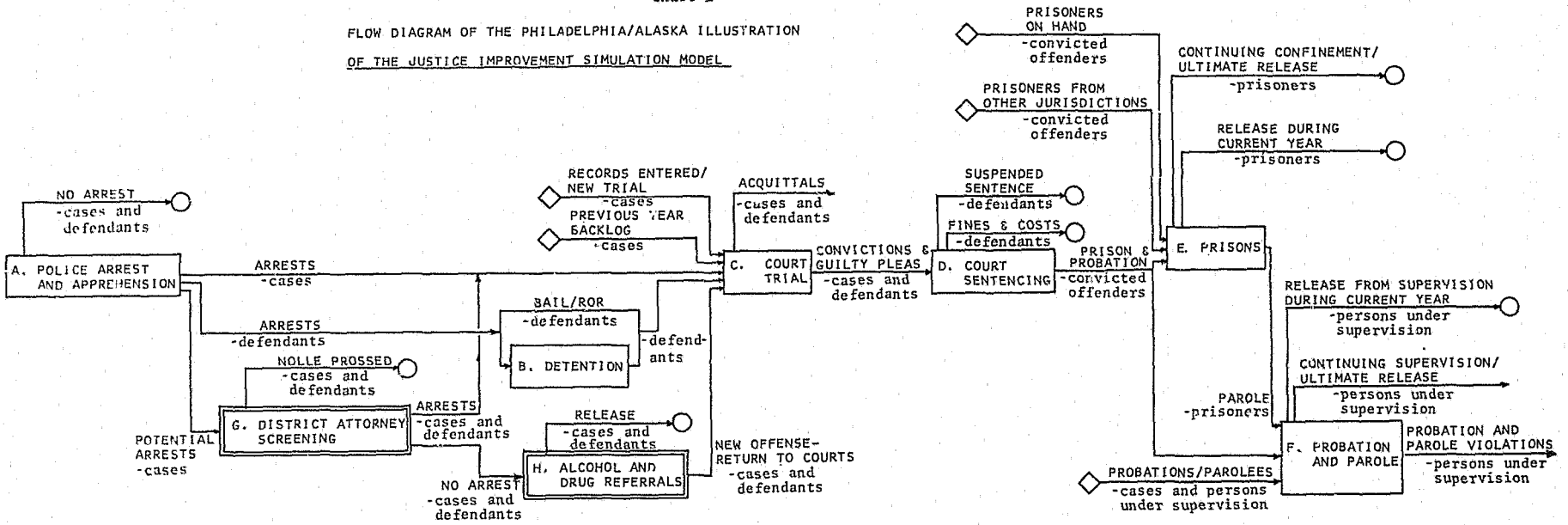
Any comprehensive public planning system must require and allow a governmental entity

- to assess and forecast its environment
- to evaluate its current status
- to set quantified objectives in terms of desired future outcomes with objectives always expressed in terms of indicators
- to predict the feasibility and the expected future outcomes

Chart 1

FLOW DIAGRAM OF THE PHILADELPHIA/ALASKA ILLUSTRATION

OF THE JUSTICE IMPROVEMENT SIMULATION MODEL



KEY

- Criminal justice processing stages in base case
- Criminal justice processing stages in test/alternative cases
- Criminal justice branches; disposition indicated on top of the line, case and/or defendant flow under the line
- Criminal justice branches; flows out of the CJ system
- Flows entering the CJ system other than current year arrests

PHILJIM

PHILADELPHIA JUSTICE IMPROVEMENT MODEL

PREPARED BY

GOVERNMENT STUDIES & SYSTEMS, INC.

FOR THE

PHILADELPHIA REGIONAL PLANNING COUNCIL

JUDGE PAUL M. CHALFIN, CHAIRMAN

RUN: PHILA-ALASKA SAMPLE

GLOSSARY OF SELECTED TERMS USED FOR THE
CURRENT VERSION OF PHILJIM -
A COMPUTER PROGRAM FOR REPRESENTING A SIMULATION MODEL OF
A TOTAL CRIMINAL JUSTICE SYSTEM

PROCESSING STAGE - A BOX ON THE CRIMINAL JUSTICE SYSTEM REPRESENTATION ILLUSTRATING A CRIMINAL JUSTICE FUNCTION THROUGH WHICH INDIVIDUALS (SUSPECTS, DEFENDANTS, ADJUDICATED OFFENDERS, AND PRISONERS) AND CASES (POLICE REPORTS, COURT CHARGES, DISTRICT ATTORNEY FILES, MEDICAL AND OTHER INVESTIGATIONS, AND PROBATION/PRISON PERFORMANCE) FLOW. AN EXAMPLE IS PRELIMINARY ARRAIGNMENT.

PROGRAM - A COLLECTION OF PROCESSING STAGES REPRESENTING MAJOR FUNCTIONAL AREAS OF THE CRIMINAL JUSTICE SYSTEM. EXAMPLES ARE POLICE, MUNICIPAL COURT, COMMON PLEAS COURT, PROBATION, AND PRISONS.

BRANCH - A LINE ON THE CRIMINAL JUSTICE SYSTEM REPRESENTATION ILLUSTRATING A PATH FROM ONE PROCESSING STAGE TO ANOTHER PROCESSING STAGE OR OUT OF THE SYSTEM. BOTH PEOPLE AND CASES MAY BE INVOLVED, AND IT IS ESSENTIAL TO DISTINGUISH THEM. EXAMPLES ARE THE PATHS FROM MUNICIPAL COURT SENTENCING TO PROBATION, AND FROM STATE PRISON OUT OF THE SYSTEM WITH EXPIRATION OF SENTENCE.

BRANCHING RATIO - THE FRACTION OF THE TOTAL CASE FLOW OF A PROCESSING STAGE THAT EXITS ALONG A PARTICULAR BRANCH. AN EXAMPLE MIGHT BE THAT 7.5 PERCENT OF ALL CASES ENTERING MUNICIPAL COURT TRIAL EXIT TO COUNTY PRISON.

KEY MANPOWER - OF ALL THE TYPES OF MANPOWER FOUND AT ANY PROCESSING STAGE, THE KEY MANPOWER IS THAT MANPOWER WHICH HAS THE MOST CONTACT WITH THE CASES OR IS GENERALLY RECOGNIZED AS CONTROLLING THE NUMBER OF CASES PROCESSED IN THE SENSE THAT THE MORE KEY MANPOWER AVAILABLE, THE GREATER NUMBER OF CASES PROCESSED. EXAMPLES ARE POLICEMEN AT POLICE STAGES, JUDGES AT COURT STAGES, AND PROBATION OFFICERS AT PROBATION STAGES.

OTHER MANPOWER - A MANPOWER FOUND AT A PROCESSING STAGE WHICH SUPERVISES OR SUPPORTS THE KEY MANPOWER. EXAMPLES ARE PROSECUTORS WHICH SUPPORT JUDGES, SUPERVISORS OF PROBATION OFFICERS, AND CLERICAL STAFF.

WORKLOAD BASED UPON KEY MANPOWER TIME - THE AMOUNT OF TIME OF A KEY MANPOWER TYPE THAT IS REQUIRED TO PROCESS ONE CASE AT A PROCESSING STAGE. AN EXAMPLE WOULD BE THAT A CASE MIGHT REQUIRE TWENTY HOURS OF A JUDGE'S TIME TO PROCESS AT A COURT STAGE. TOTAL WORKLOAD IS THE TOTAL TIME OF A KEY MANPOWER TYPE THAT IS REQUIRED TO PROCESS ALL CASES AT A STAGE. IF THE COURT STAGE HAD 1000 CASES, THEN, AT 20 HOURS PER CASE, 20,000 JUDGE HOURS ARE REQUIRED.

WORKLOAD BASED UPON TIME SPENT IN A PROCESSING STAGE - IF A PROCESSING STAGE INVOLVES A CASE SPENDING A CONSIDERABLE LENGTH OF TIME IN THE STAGE, THE WORKLOAD MAY BE EXPRESSED IN LENGTH OF TIME A CASE SPENDS IN THE STAGE. FOR EXAMPLE, A CASE MAY SPEND 24 MONTHS IN PROBATION AT A COST OF 100 DOLLARS PER MONTH.

AVERAGE POPULATION PER TIME UNIT - IF A PROCESSING STAGE INVOLVES A CASE

An optional glossary of terms. The audience of a presentation or officials using the model for operational or planning purposes have a ready reference for terminology.

SPENDING A CONSIDERABLE LENGTH OF TIME IN THE STAGE, THE AVERAGE POPULATION PER TIME UNIT IS THE AVERAGE OF THE "SNAPSHOTS" OF NUMBER OF CASES THAT ARE IN PROCESS AT ANY ONE TIME. EXAMPLES ARE THE AVERAGE DAILY POPULATION OF A PRISON AND THE AVERAGE MONTHLY CASELOAD OF A PROBATION STAGE.

NON-SALARY VARIABLE COSTS - COSTS OTHER THAN SALARY COSTS WHICH VARY WITH THE NUMBER OF CASES PROCESSED. EXAMPLES ARE TRAVEL AND PURCHASE OF OUTSIDE SERVICES.

NON-SALARY FIXED COSTS - COSTS OTHER THAN SALARY COSTS WHICH DO NOT VARY PROPORTIONATELY WITH THE CASELOAD. EXAMPLES ARE RENTAL, DEPRECIATION, AND DEBT SERVICE.

CRIME TYPE - A CRIME TYPE IS ONE OF THE 26 - 30 CATEGORIES OF CRIME USED IN THE UNIFORM CRIME REPORTS (UCR) DATA.

CRIME GROUP - A COLLECTION OF CRIME TYPES. IT IS ASSUMED THAT A CRIME TYPE BELONGS TO ONE AND ONLY ONE CRIME GROUP. AN EXAMPLE ARE THE PART I CRIMES: MURDER, RAPE, ROBBERY, AGGRAVATED ASSAULT, BURGLARY, LARCENY, AND AUTO THEFT. INPUT AND OUTPUT DATA ABOUT A PROCESSING STAGE ARE BY CRIME GROUP.

CRIME GROUPING - A COLLECTION OF CRIME GROUPS. DIFFERENT PROCESSING STAGES USE DIFFERENT SETS OF CRIME GROUPS TO RECORD AND DISPLAY THEIR DATA. EXAMPLES ARE THE PART I/PART II CRIME GROUPING USED BY POLICE AND THE INTENSIVE/GENERAL CRIME GROUPING USED IN PROBATION.

RUN: PHILA-ALASKA SAMPLE PAGE 3

LISTING OF ALL THE INPUT DATA CARDS FOR THIS RUN

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   RUN  PHILA-ALASKA SAMPLE          BOTH
 1 CRTY MURDER                         58
 2 CRTY RAPE                          144
 3 CRTY ROBBERY                       208
 4 CRTY AGG. ASSAULT                 1828
 5 CRTY BURGLARY                     2530
 6 CRTY LARCENY                      3495
 7 CRTY AUTO THEFT                   1621
 8 CRTY DRUNKENNESS                 21744
 9 CRTY DRUGS                        3162
10 CRTY OTHER                       17792
 1 CRGP MURDER              1            1
 1 CRGP RAPE                2            2
 1 CRGP ROBBERY             3            3
 1 CRGP AGG. ASSAULT        4            4
 1 CRGP BURGLARY            5            5
 1 CRGP LARCENY             6            6
 1 CRGP AUTO THEFT          7            7
 1 CRGP DRUNKENNESS         8            8
 1 CRGP DRUGS               9            9
 1 CRGP OTHER              10           10
 2 CRGP ALL CRIMES          1            1      2      3      4      5
 2 CRGP ALL CRIMES          1            6      7      8      9     10
 3 CRGP PART I              1            1      2      3      4      5
 3 CRGP PART I              1            6      7
 3 CRGP PART II             2            8      9     10
 4 CRGP VICTIM/VIOLENT      1            1      2      3      4
 4 CRGP VICTIM/NON-VIOLENT  2            5      6      7
 4 CRGP NO VICTIM           3            8      9     10
 5 CRGP FELONY              1            1      2      3      4      5
 5 CRGP FELONY              1            6      7
 5 CRGP MISDEMEANOR         2            8      9     10
 6 CRGP INTENSIVE           1            8      9
 6 CRGP GENERAL             2            1      2      3      4      5
 6 CRGP GENERAL             2            6      7     10
 1 PROG POLICE
 2 PROG COURTS
 3 PROG PROBATION
 4 PROG PRISONS
   BASE BASE CASE DATA
 A STAG POLICE APPRE/ARREST  CRES RATO        1      1
 A KYMN POLICEMEN            AVGE HOUR              10200    360
 A OTMN SUPERVISORS          AVGE                   13500    .12
 A WORK POLICE HOURS               HOUR       13     13     13     13     13
 A WORK POLICE HOURS               HOUR       13     13      4      4      4
 A NSVR VEHICLE OPERATION    OVAL HOUR     2.84
 A NSFX POLICE LABORATORY                325000
 A BRCH ARRESTS - CASES      C     UCSE      .95    .93    .85    .80    .74
 A BRCH                                    .79    .68    .75    .90    .70
 A BRCH NO ARRESTS - CASES         UCSE      .05    .07    .15    .20    .26
 A BRCH                                    .21    .32    .25    .10    .30
 A BRCH DETAINED             B     UPLE      .95    .56    .25    .40    .15
 A BRCH                                    .15    .05    .03    .30    .05
 A BRCH BAIL/ROR             C     NPLE      .00    .37    .60    .40    .59
 A BRCH                                    .64    .63    .72    .60    .65
 A BRCH NO ARRESTS - PEOPLE        UPLE      .05    .07    .15    .20    .26
 A BRCH                                    .21    .32    .25    .10    .30
```

An optional listing of the input deck card images for debugging. The input cards are formatted to be understandable: card types (columns 4-7) indicate the type of data on the card, the time units used, if any, are on the cards, and titles appear next to the data.

B STAG	DETENTION	CRES	RATO	4	2			
B WORK	DETENTION DAYS		DAYS	64.25				
B NSVR	TOTAL COST/DAY	OVAL	DAYS	4.50				
B BRCH	COURTS	C	NPLE	1.0				
C STAG	COURT TRIAL	BFLW	RATO	2	4			
C ENTF	RCRDS ENT/NEW TRIAL	CRTY		26	35	44	53	111
C ENTF				65	34	12	83	79
C BKLG	BEGINNING BACKLOG			500	400	9000		
C KYMN	JUDGES	AVGE	HOUR	17	25000	1650		
C WORK	JUDGE HOURS		HOUR	8	3	1		
C OTMN	MAGISTRATES	AVGE		60	8500			
C NSVR	PRISONER TRANSPORT	CRGP	CASE	109750	11985	65257		
C NSVR	WITNESS/JUROR FEES	CRGP	CASE	35000	0	0		
C NSFX	RENTAL - 3 COURT RMS			21600				
C BRCH	CONVICTIONS	D	UCSE	.64	.62	.59		
C BRCH	ACQUITTED		UCSE	.36	.38	.41		
D STAG	COURT SENTENCING	OFLW	RATO	2	5			
D BRCH	PRISONS	E	UPLE	.25	.08			
D BRCH	PROBATION	F	UPLE	.45	.26			
D BRCH	SUSPENDED SENTENCE		UPLE	.30	.38			
D BRCH	FINES AND COSTS		UPLE	.05	.33			
E STAG	PRISONS	CRES	RATO	4	5			
E ENTF	PRISONERS ON HAND	OVAL		1500				
E ENTF	OTHER JURISDICTIONS	CRTY		5	0	50	100	200
E ENTF				0	50	0	0	0
E WORK	PRISONER-MONTHS		MONS	8.5	5			
E OTMN	PRISON GUARDS	AVGE		200	9000			
E OTMN	MEDICAL PERSONNEL	AVGE		10	25000			
E NSVR	EDUCATION TUITION	OVAL	MONS	1.50				
E NSVR	FOOD/CLOTHING	OVAL	MONS	85				
E BRCH	OUTRIGHT RELEASE		UPLE	.20	.65			
E BRCH	PAROLE	F	UPLE	.35	.30			
E BRCH	CONTINUING CONFINMNT		UPLE	.45	.05			
F STAG	PROBATION/PAROLE	CWRK	FLOW	3	6			
F ENTF	CONTINUING SUPERVSN.	OVAL		2384				
F KYMN	PROBATION OFFICERS	AVGE	CASE	53	12500			
F ASGN	PROP. READ IN	PROP		.65	.35			
F NSVR	PROB. OFF. TRAVEL	OVAL	CASE	106000				
F NSFX	PSY. CONTRACT SERV.			75000				
F BRCH	RELEASE		UPLE	210	2450			
F BRCH	VIOLATIONS		UPLE	450	1200			
F BRCH	CONTINUING PROBATION		UPLE	2000	940			
PJTS	PROPOSED PROJECTS							
XX PROJ	ADD COURT MANPOWER							
C STAG	COURT TRIAL							
C KYMN	JUDGES			11				
C OTMN	MAGISTRATES			15				
C OTMN	COURT REPORTERS	AVGE		14	9600			
YY PROJ	SCREENING/REFERRAL							
A STAG	POLICE							
A BRCH	ARRESTS - CASES	C	UCSE	-.53	-.43	-.23	-.39	-.25
A BRCH				-.25	-.09	-.39	-.72	-.15
A BRCH	DETAINED	J	UPLE	-.53	-.33	-.18	-.25	-.06
A BRCH				-.06	-.01	-.02	-.12	-.01
A BRCH	BAIL/ROR	C	NPLE	.00	-.10	-.05	-.14	-.19
A BRCH				-.19	-.08	-.37	-.60	-.14
A BRCH	D.A. SCREENING-CASES	G	UCSE	.53	.43	.23	.39	.25
A BRCH				.25	.09	.39	.72	.15
A BRCH	D.A. SCREENING-PEPLE	G	NPLE	.53	.43	.23	.39	.25
A BRCH				.25	.09	.39	.72	.15
G STAG	DA SCREENING	CRES	RATO	2	4			
G KYMN	ASST. DA'S	AVGE	HOUR		15500	1400		
G OTMN	SUPERVISING D.A.	AVGE			18000	.25		

G	OTMN	SECRETARY/CLERICAL	AVGE			7500	.33
G	WORK	ASST. DA HOURS		HOUR	1.00	.50	.25
G	NSFX	D.A. TRAVEL			12500		
G	NSFX	PROJECT EVALUATION			22500		
G	BRCH	CASES NOLLE PROS		UCSF	.10	.14	.85
G	BRCH	CASES CONTINUED	C	UCSF	.90	.86	.15
G	BRCH	PEOPLE DISMISSED		UPLE	.10	.14	.45
G	BRCH	ALCOHOL/DRUG REFERRL	H	UPLE	.00	.00	.40
G	BRCH	DETAINED	B	UPLE	.55	.26	.02
G	BRCH	BAIL/ROR	C	NPLE	.35	.60	.13
H	STAG	ALCOHOL/DRUG REFERRL	CWRK	RATO		6	
H	KYMN	PSYCHOLOGISTS	AVGE	HOUR	6	18500	1450
H	OTMN	MEDICAL DOCTORS	AVGE		2	22500	
H	OTMN	PARA-MEDICAL	AVGE		6	8500	
H	NSFX	FACILITIES RENTAL			65000		
H	NSFX	LABORATORY COSTS			80000		
H	BRCH	RELEASE		UPLE	.90	.15	
H	BRCH	RETURN TO COURTS	C	UPLE	.10	.85	
C	STAG	COURT TRIAL					
C	BRCH	CONVICTIONS	D	UCSE	.14	.16	.12
C	BRCH	ACQUITTED		UCSE	-.14	-.16	-.12
0	PLAN	BASE CASE	INPJ				
1	PLAN	ALT. PLAN 1	INPJ		XX	YY	
	END						

NUMBER OF CARDS: 144

INPUT FLOWS TO THE FIRST PROCESSING STAGE

NUMBER	CRIME TYPE	INPUT FLOW
1	MURDER	58
2	RAPE	144
3	ROBBERY	208
4	AGG. ASSAULT	1828
5	BURGLARY	2530
6	LARCENY	3495
7	AUTO THEFT	1621
8	DRUNKENNESS	21744
9	DRUGS	3162
10	OTHER	17792
	TOTAL	52582

The input flow to the first stage is the primary entrance to the criminal justice system. The input flows are by crime type. Note the use of the crime type titles. Different stages of the criminal justice system will use different groupings of these crime types to express branching flows, workloads, etc., as is shown on page 7.

DEFINITION OF CRIME GROUPINGS

CRIME GROUPING NUMBER 1

CRIME GROUP 1 MURDER CONTAINS
THE FOLLOWING CRIME TYPES:
1 MURDER

CRIME GROUP 2 RAPE CONTAINS
THE FOLLOWING CRIME TYPES:
2 RAPE

CRIME GROUP 3 ROBBERY CONTAINS
THE FOLLOWING CRIME TYPES:
3 ROBBERY

CRIME GROUP 4 AGG. ASSAULT CONTAINS
THE FOLLOWING CRIME TYPES:
4 AGG. ASSAULT

CRIME GROUP 5 BURGLARY CONTAINS
THE FOLLOWING CRIME TYPES:
5 BURGLARY

CRIME GROUP 6 LARCENY CONTAINS
THE FOLLOWING CRIME TYPES:
6 LARCENY

CRIME GROUP 7 AUTO THEFT CONTAINS
THE FOLLOWING CRIME TYPES:
7 AUTO THEFT

CRIME GROUP 8 DRUNKENNESS CONTAINS
THE FOLLOWING CRIME TYPES:
8 DRUNKENNESS

CRIME GROUP 9 DRUGS CONTAINS
THE FOLLOWING CRIME TYPES:
9 DRUGS

CRIME GROUP 10 OTHER CONTAINS
THE FOLLOWING CRIME TYPES:
10 OTHER

CRIME GROUPING NUMBER 2

CRIME GROUP 1 ALL CRIMES CONTAINS
THE FOLLOWING CRIME TYPES:
1 MURDER
2 RAPE
3 ROBBERY
4 AGG. ASSAULT
5 BURGLARY
6 LARCENY
7 AUTO THEFT
8 DRUNKENNESS

Here are 6 different groupings of the 10 crime types used in the example. The first crime grouping has 10 crime groups--each crime type in its own crime group. The second crime grouping has one crime group: all crime types lumped together. The third, fourth, fifth, and sixth crime groupings have 2, 3, 2, and 2 crime groups, respectively, with the crime types included under each group as shown.

Part of the data about a stage are the crime groupings to be used for input data about the stage and the crime grouping to be used for output reports about the stage. The input data may then be tailored to the level of information detail available from the criminal justice system. Different stages in the criminal justice system may use the same or different crime groups in the same run.

These pages provide a ready reference to the definitions of the crime groupings and their crime groups. Note the use of crime group and crime type titles.

The number of crime groupings employed are a function of (1) the crime aggregations used in the reporting and information systems of the major agencies in the specific criminal justice system, and (2) the level of detail desired by the officials responsible for managing each of the processing stages in the model.

9 DRUGS
10 OTHER

CRIME GROUPING NUMBER 3

CRIME GROUP 1 PART I CONTAINS
THE FOLLOWING CRIME TYPES:
1 MURDER
2 RAPE
3 ROBBERY
4 AGG. ASSAULT
5 BURGLARY
6 LARCENY
7 AUTO THEFT

CRIME GROUP 2 PART II CONTAINS
THE FOLLOWING CRIME TYPES:
8 DRUNKENNESS
9 DRUGS
10 OTHER

CRIME GROUPING NUMBER 4

CRIME GROUP 1 VICTIM/VIOLENT CONTAINS
THE FOLLOWING CRIME TYPES:
1 MURDER
2 RAPE
3 ROBBERY
4 AGG. ASSAULT

CRIME GROUP 2 VICTIM/NON-VIOLENT CONTAINS
THE FOLLOWING CRIME TYPES:
5 BURGLARY
6 LARCENY
7 AUTO THEFT

CRIME GROUP 3 NO VICTIM CONTAINS
THE FOLLOWING CRIME TYPES:
8 DRUNKENNESS
9 DRUGS
10 OTHER

CRIME GROUPING NUMBER 5

CRIME GROUP 1 FELONY CONTAINS
THE FOLLOWING CRIME TYPES:
1 MURDER
2 RAPE
3 ROBBERY
4 AGG. ASSAULT
5 BURGLARY
6 LARCENY
7 AUTO THEFT

CRIME GROUP 2 MISDEMEANOR CONTAINS
THE FOLLOWING CRIME TYPES:
8 DRUNKENNESS

9 DRUGS
10 OTHER

CRIME GROUPING NUMBER 6

CRIME GROUP 1 INTENSIVE CONTAINS
THE FOLLOWING CRIME TYPES:
8 DRUNKENNESS
9 DRUGS

CRIME GROUP 2 GENERAL CONTAINS
THE FOLLOWING CRIME TYPES:
1 MURDER
2 RAPE
3 ROBBERY
4 AGG. ASSAULT
5 BURGLARY
6 LARCENY
7 AUTO THEFT
10 OTHER

Start of the Base Case output reports. The base case represents the current status of the criminal justice system, prior to any changes that may be made through use of Law Enforcement Assistance Administration (LEAA) funds or other funding sources.

RUN: PHILA-ALASKA SAMPLE PLAN: 0 BASE CASE PAGE 11

STAGE A POLICE APPRE/ARREST

THIS STAGE BELONGS TO PROGRAM 1 POLICE

STAGE TYPE: ALL INPUT FLOWS ARE TO BE PROCESSED AND SENT TO OTHER STAGES, WORKLOADS AND COSTS PER CASE ARE TO BE READ IN, AND MANPOWER AND COST RESOURCES REQUIRED ARE TO BE COMPUTED.

THE CRIME GROUPING USED TO SPECIFY THE INPUT DATA IS CRIME GROUPING NUMBER 1
THE CRIME GROUPING USED FOR OUTPUT REPORTS IS CRIME GROUPING NUMBER 1
(SEE ABOVE REPORT ON DEFINITION OF CRIME GROUPINGS)

INPUT FLOWS

CRIME GROUP	COMPUTED FLOW
MURDER	58.0
RAPE	144.0
ROBBERY	208.0
AGG. ASSAULT	1828.0
BURGLARY	2530.0
LARCENY	3495.0
AUTO THEFT	1621.0
DRUNKENNESS	21744.0
DRUGS	3162.0
OTHER	17792.0
TOTAL	52582.0

WORKLOADS

WORKLOAD: POLICE HOURS

KEY MANPOWER PROCESSING TIMES REQUIRED PER CASE WERE READ IN AND MULTIPLIED BY THE COMPUTED INPUT FLOWS TO CALCULATE THE TOTAL KEY MANPOWER TIME REQUIRED TO PROCESS ALL CASES

CRIME GROUP	KEY MANPOWER PROCESSING TIME REQUIRED PER CASE IN HOURS	TOTAL KEY MANPOWER PROCESSING TIME REQUIRED FOR ALL CASES IN HOURS
MURDER	13.000	754.00
RAPE	13.000	1872.00
ROBBERY	13.000	2704.00
AGG. ASSAULT	13.000	23764.00
BURGLARY	13.000	32890.00
LARCENY	13.000	45435.00
AUTO THEFT	13.000	21073.00
DRUNKENNESS	4.000	86976.00
DRUGS	4.000	12648.00
OTHER	4.000	71168.00
TOTAL	5.692	299284.00

KEY MANPOWER - MANPOWER ASSOCIATED WITH WORKLOADS

This page begins the output reports about the first stage: in the example, Police Apprehension/Arrest. Output reports are grouped by stage in the logical input and computational sequence for each stage. Part of the input data for the Police Apprehension/Arrest Stage is the program to which the stage belongs. After the Base Case or Alternative Plan reports for each stage, costs are grouped by program, by stage, and by cost type.

The way the stage is modelled is next described on the output. As input data for the stage, the user includes one of four possible stage types, coding the way the stage will be modelled. In the case of Police Apprehension/Arrest, the stage type is "all input flows are to be processed and sent to other stages, workloads and costs per case are to be read in, and manpower and cost resources required are to be computed." Other stage types will be illustrated later. In subsequent runs to support different phases of a planning process, a stage may be modelled with different stage types.

The crime groupings for Police Apprehension/Arrest are next shown.

The input flows to Police Apprehension/Arrest are the input flows shown on Page 6. These flows are reported crimes.

Because the stage is modelled as compute resources required and manpower is to be explicitly mentioned, the amount of a policemen's time (the key manpower type) required per reported crime is input by crime group. Which time units (in this case,hours) are to be used is also controlled by the user. An alternative way of inputting the workload per case is to input the number of cases overall,or by crime group, per year a policeman can handle.

Given the number of reported crimes and the amount of a policeman's time required per reported crime, the total policeman's time required to process all cases is computed.

MANPOWER TYPE: POLICEMEN

AVERAGE ANNUAL SALARY PER MAN: 10200.00

ANNUAL HOURS AVAILABLE PER MAN: 360.

THE TOTAL KEY MANPOWER TIME REQUIRED WAS DIVIDED BY THE ANNUAL TIME AVAILABLE PER KEY MAN TO CALCULATE THE TOTAL NUMBER OF KEY MANPOWER REQUIRED

CRIME GROUP	REQUIRED MANPOWER	REQUIRED PROPORTION	REQUIRED SALARIES
MURDER	2.09	0.0025	21363.33
RAPE	5.20	0.0063	53040.00
ROBBERY	7.51	0.0090	76613.31
AGG. ASSAULT	66.01	0.0794	673313.25
BURGLARY	91.36	0.1099	931883.19
LARCENY	126.21	0.1518	1287324.00
AUTO THEFT	58.54	0.0704	597068.19
DRUNKENNESS	241.60	0.2906	2464319.00
DRUGS	35.13	0.0423	358359.94
OTHER	197.69	0.2378	2016426.00
TOTAL	831.34	1.0000	8479706.00

The annual hours a policeman is available to handle reported crimes is input and used to compute the number of policemen required, which together with the annual salary gives the required policemen salary costs.

OTHER MANPOWER - MANPOWER VARYING WITH KEY MANPOWER

THE RATIOS OF OTHER MEN PER KEY MAN WERE READ IN AND MULTIPLIED BY THE TOTAL REQUIRED KEY MANPOWER TO CALCULATE THE TOTAL OTHER MEN REQUIRED

MANPOWER TYPE: SUPERVISORS

AVERAGE ANNUAL SALARY PER MAN: 13500.00

RATIO OTHER MEN PER KEY MAN: 0.12

TOTAL KEY MANPOWER: 831.3

TOTAL OTHER MANPOWER: 99.8

TOTAL SALARIES: 1346776.00

Other manpower associated with the stage in a supervising or supporting role to the key manpower type may be input. For a compute resources required stage type, the ratio of the other manpower to key manpower is input and multiplied times the number of key manpower required. Several other manpower types may be used for a stage.

NON-SALARY VARIABLE COSTS

NON-SALARY VARIABLE COST TYPE: VEHICLE OPERATION

THE NON-SALARY COSTS PER KEY MANPOWER TIME WERE READ IN AND MULTIPLIED BY THE TOTAL REQUIRED KEY MANPOWER TIME TO CALCULATE TOTAL NON-SALARY COST

CRIME GROUP	NON-SALARY COST PER HOUR OF KEY MANPOWER PROCESSING TIME	NON-SALARY COST
MURDER	2.84	2141.36
RAPE	2.84	5316.48
ROBBERY	2.84	7679.36
AGG. ASSAULT	2.84	67489.69
BURGLARY	2.84	93407.56
LARCENY	2.84	129035.31
AUTO THEFT	2.84	59847.30

Both variable and fixed non-salary costs may be used for a stage. Here a non-salary cost variable with the number of key manpower hours is shown. For a compute resources required stage type, the non-salary cost per hour of policemen's time is input and multiplied times the number of policemen hours to compute the non-salary cost. Several non-salary variable cost types may be used for a stage and the costs may also be computed on a case basis. The costs per case may be input by crime group or overall.

DRUNKENNESS	2.84	247011.75
DRUGS	2.84	35920.31
OTHER	2.84	202117.06
TOTAL	2.84	849966.06

NON-SALARY FIXED COSTS

NON-SALARY FIXED COST TYPE: POLICE LABORATORY AMOUNT: 325000.00

Several non-salary fixed cost types may be used for a stage.

TOTAL STAGE COSTS

SALARY	9826405.00
NON-SALARY	1174966.00
TOTAL	11001451.00

The salary and non-salary costs are added together.

OUTPUT BRANCHING RATIOS AND FLOWS

THE BRANCHING RATIOS WERE READ IN AND MULTIPLIED BY THE ABOVE COMPUTED INPUT FLOWS TO CALCULATE THE COMPUTED BRANCHING FLOWS.

BRANCH: ARRESTS - CASES TO STAGE: C COURT TRIAL

THIS BRANCH HAS CASE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
MURDER	0.9500	55.1
RAPE	0.9300	133.9
ROBBERY	0.8500	176.8
AGG. ASSAULT	0.8000	1462.4
BURGLARY	0.7400	1872.2
LARCENY	0.7900	2761.0
AUTO THEFT	0.6800	1102.3
DRUNKENNESS	0.7500	16308.0
DRUGS	0.9000	2845.8
OTHER	0.7000	12454.4
TOTAL	0.7450	39171.9

The Police Apprehension/Arrest stage has 5 exiting branches. The first two branches show the reported crimes leaving Police Apprehension/Arrest as either arrested cases entering stage Court Trial or as no arrest cases dropping out of the criminal justice system. The last three branches show the reported crimes leaving Police Apprehension/Arrest as arrested defendant flows to either Detention Stage or out on Bail/Released-On-Own-Recognizance or as people dropped because of no arrest.

Because both cases and people leave Police Apprehension/Arrest on separate branches, twice the flow leaves the stage than enters. Later stages bring this double flow back together again so as not to double count.

BRANCH: NO ARRESTS - CASES TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS CASE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
MURDER	0.0500	2.9
RAPE	0.0700	10.1
ROBBERY	0.1500	31.2
AGG. ASSAULT	0.2000	365.6
BURGLARY	0.2600	657.8
LARCENY	0.2100	733.9
AUTO THEFT	0.3200	518.7
DRUNKENNESS	0.2500	5436.0
DRUGS	0.1000	316.2
OTHER	0.3000	5337.6
TOTAL	0.2550	13410.0

In this example, branching ratios were input and the branching flows were calculated. A later stage will show the alternative way in which actual branching flows are input, the branching ratios are calculated and computed branching flows are compared with actual branching flows in a discrepancy analysis to allow debugging the flow picture. The model will calculate the respective branching ratios when actual branching flows are input and cases and people have separate branches.

BRANCH: DETAINED TO STAGE: B DETENTION

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
MURDER	0.9500	55.1
RAPE	0.5600	80.6
ROBBERY	0.2500	52.0
AGG. ASSAULT	0.4000	731.2
BURGLARY	0.1500	379.5
LARCENY	0.1500	524.2
AUTO THEFT	0.0500	81.0
DRUNKENNESS	0.0300	652.3
DRUGS	0.3000	948.6
OTHER	0.0500	889.6
TOTAL	0.0836	4394.3

BRANCH: BAIL/ROR TO STAGE: C COURT TRIAL

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
MURDER	0.0	0.0
RAPE	0.3700	53.3
ROBBERY	0.6000	124.8
AGG. ASSAULT	0.4000	731.2
BURGLARY	0.5900	1492.7
LARCENY	0.6400	2236.8
AUTO THEFT	0.6300	1021.2
DRUNKENNESS	0.7200	15655.7
DRUGS	0.6000	1897.2
OTHER	0.6500	11564.8
TOTAL	0.6614	34777.7

BRANCH: NO ARRESTS - PEOPLE TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
MURDER	0.0500	2.9
RAPE	0.0700	10.1
ROBBERY	0.1500	31.2
AGG. ASSAULT	0.2000	365.6
BURGLARY	0.2600	657.8
LARCENY	0.2100	733.9
AUTO THEFT	0.3200	518.7
DRUNKENNESS	0.2500	5436.0
DRUGS	0.1000	316.2
OTHER	0.3000	5337.6
TOTAL	0.2550	13410.0

Note the use of letters A, B, C, etc. for stage codes. Stages do not have to be numbered sequentially; any alpha-numeric codes may be used. Alpha-numeric coding allows the insertion or deletion of stages in a criminal justice system representation with the minimum number of changes to other stage data cards because other stages do not have to be re-numbered and therefore "to stage" branching codes do not have to be changed. Under the alpha-numeric coding, stages are output in the order in which the output information about them is computed.

RUN: PHILA-ALASKA SAMPLE PLAN: 0 BASE CASE PAGE 15

STAGE 8 DETENTION

THIS STAGE BELONGS TO PROGRAM 4 PRISONS

STAGE TYPE: ALL INPUT FLOWS ARE TO BE PROCESSED AND SENT TO OTHER STAGES,
WORKLOADS AND COSTS PER CASE ARE TO BE READ IN, AND MANPOWER
AND COST RESOURCES REQUIRED ARE TO BE COMPUTED.

THE CRIME GROUPING USED TO SPECIFY THE INPUT DATA IS CRIME GROUPING NUMBER 2
THE CRIME GROUPING USED FOR OUTPUT REPORTS IS CRIME GROUPING NUMBER 2
(SEE ABOVE REPORT ON DEFINITION OF CRIME GROUPINGS)

INPUT FLOWS

CRIME GROUP	COMPUTED FLOW
ALL CRIMES	4394.3

WORKLOADS

WORKLOAD: DETENTION DAYS

REQUIRED TIME DURATIONS TO BE SPENT IN THIS STAGE WERE READ IN AND MULTIPLIED BY THE COMPUTED INPUT FLOWS TO CALCULATE THE TOTAL REQUIRED TIME DURATION TO BE SPENT BY ALL CASES. THE TOTAL REQUIRED TIME DURATION WAS DIVIDED BY THE NUMBER OF TIME UNITS PER YEAR TO CALCULATE THE AVERAGE POPULATION PER TIME UNIT

CRIME GROUP	REQUIRED TIME DURATION SPENT IN THIS STAGE PER CASE IN DAYS	TOTAL REQUIRED TIME DURATION SPENT IN THIS STAGE BY ALL CASES IN DAYS
ALL CRIMES	64.250	282330.88

CRIME GROUP	AVERAGE POPULATION PER DAYS
ALL CRIMES	773.5

NON-SALARY VARIABLE COSTS

NON-SALARY VARIABLE COST TYPE: TOTAL COST/DAY

THE NON-SALARY COSTS PER TIME DURATION A CASE SPENDS IN THE STAGE WERE READ IN AND MULTIPLIED BY THE TOTAL TIME DURATION FOR ALL CASES TO CALCULATE THE NON-SALARY COSTS

CRIME GROUP	NON-SALARY COST PER DAYS OF TIME DURATION SPENT IN THIS STAGE	NON-SALARY COST
ALL CRIMES	4.50	1270489.00

The next stage, Detention, uses a different crime grouping than Police Apprehension/Arrest. The crime grouping lumps all crimes together. Like the Police Apprehension/Arrest stage, Detention is modelled in this example as a compute resources required stage. However, no key manpower type will be explicitly mentioned in the data. Therefore, the workload is input as time duration a defendant spends in the detention. The model computes the total prisoner-days and the average daily population. A non-salary variable cost per day (really the total cost per day) is multiplied by the total prisoner-days to compute the required total cost.

TOTAL STAGE COSTS

SALARY	0.0
NON-SALARY	1270489.00
TOTAL	1270489.00

OUTPUT BRANCHING RATIOS AND FLOWS

THE BRANCHING RATIOS WERE READ IN AND MULTIPLIED BY THE ABOVE COMPUTED INPUT FLOWS TO CALCULATE THE COMPUTED BRANCHING FLOWS.

BRANCH: COURTS TO STAGE: C COURT TRIAL

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
ALL CRIMES	1.0000	4394.3

STAGE C COURT TRIAL

THIS STAGE BELONGS TO PROGRAM 2 COURTS

STAGE TYPE: WORKLOADS AND COSTS PER CASE ARE TO BE READ IN, MANPOWER AND COST RESOURCES AVAILABLE ARE TO BE READ IN, AND INPUT FLOWS THAT ARE ABLE TO BE PROCESSED AND SENT TO OTHER STAGES WITHIN THE AVAILABLE RESOURCES ARE TO BE COMPUTED AND THE REMAINING FLOWS, IF ANY, ARE TO BE BACKLOGGED.

THE CRIME GROUPING USED TO SPECIFY THE INPUT DATA IS CRIME GROUPING NUMBER 4
THE CRIME GROUPING USED FOR OUTPUT REPORTS IS CRIME GROUPING NUMBER 4
(SEE ABOVE REPORT ON DEFINITION OF CRIME GROUPINGS)

The Court Trial Stage shows another way a stage may be modelled. The Court Trial stage is a stage in which the capacity to process flow is compared with the input flow to determine how many cases are processed, and establish the ending backlog.

FLOWS ENTERING FROM OUTSIDE THE C.J.S. AT THIS STAGE

DATA ON THE FLOWS ENTERING FROM OUTSIDE THE C.J.S. AT THIS STAGE WERE READ IN AND ADDED TO THE COMPUTED INPUT FLOWS FOR THIS STAGE

ENTERING BRANCH: RCROS ENT/NEW TRIAL

CRIME TYPE	ENTERING FLOW
MURDER	26.0
RAPE	[illegible].0
ROBBERY	44.0
AGG. ASSAULT	53.0
BURGLARY	111.0
LARCENY	65.0
AUTO THEFT	34.0
DRUNKENNESS	12.0
DRUGS	83.0
OTHER	79.0
TOTAL	542.0

The Court Trial stage shows the use of a flow entering the criminal justice system from outside at the stage. A stage may have several entering flows. A backlogged flow stage may also have a beginning backlog data. The flow from prior stages, the entering branch, and the beginning backlog are combined to get the input flows to Court Trial.

BEGINNING BACKLOG

DATA ON THE BEGINNING BACKLOG WERE READ IN AND ADDED TO THE COMPUTED INPUT FLOWS FOR THIS STAGE

CRIME GROUP	BEGINNING BACKLOG
VICTIM/VIOLENT	500.0
VICTIM/NON-VIOLENT	400.0
NO VICTIM	9000.0
TOTAL	9900.0

INPUT FLOWS

CRIME GROUP	COMPUTED FLOW
VICTIM/VIOLENT	2486.2
VICTIM/NON-VIOLENT	6345.5
NO VICTIM	40782.2

The Court Trial stage uses a different crime grouping than previous stages.

TOTAL	49613.9	

WORKLOADS

WORKLOAD: JUDGE HOURS

KEY MANPOWER PROCESSING TIMES REQUIRED PER CASE WERE READ IN AND MULTIPLIED BY THE COMPUTED INPUT FLOWS TO CALCULATE THE TOTAL KEY MANPOWER TIME REQUIRED TO PROCESS ALL CASES

CRIME GROUP	KEY MANPOWER PROCESSING TIME REQUIRED PER CASE IN HOURS	TOTAL KEY MANPOWER PROCESSING TIME REQUIRED FOR ALL CASES IN HOURS
VICTIM/VIOLENT	8.000	19889.75
VICTIM/NON-VIOLENT	3.000	19036.58
NO VICTIM	1.000	40782.19
TOTAL	1.607	79708.50

KEY MANPOWER - MANPOWER ASSOCIATED WITH WORKLOADS

MANPOWER TYPE: JUDGES

AVERAGE ANNUAL SALARY PER MAN: 25000.00

ANNUAL HOURS AVAILABLE PER MAN: 1650.

THE TOTAL KEY MANPOWER TIME REQUIRED WAS DIVIDED BY THE ANNUAL TIME AVAILABLE PER KEY MAN TO CALCULATE THE TOTAL NUMBER OF KEY MANPOWER REQUIRED

CRIME GROUP	REQUIRED MANPOWER	REQUIRED PROPORTION	REQUIRED SALARIES
VICTIM/VIOLENT	12.05	0.2495	301359.81
VICTIM/NON-VIOLENT	11.54	0.2388	288433.00
NO VICTIM	24.72	0.5116	617911.88
TOTAL	48.31	1.0000	1207704.00

TOTAL KEY MANPOWER AVAILABLE WAS READ IN

TOTAL KEY MANPOWER AVAILABLE: 17.0

TOTAL ASSIGNED SALARIES: 425000.00

TOTAL KEY MANPOWER REQUIRED LESS TOTAL KEY MANPOWER AVAILABLE: 31.3

RATIO KEY MANPOWER AVAILABLE TO REQUIRED: 0.352

The required judges are compared with the available judges to get an allocation proportion of .352 which represents that .352 of all the input flows are processed and sent to other stages. The .352 applies to all crime groups. As options, the user may assign available judges to the crime groups for different proportions of the input flows to be processed, or the user may specify a priority ordering across the crime groups.

PROCESSED FLOWS

CRIME GROUP	COMPUTED INPUT FLOW	PROCESSED FLOW	ENDING BACKLOG	RATIO PROCESSED FLOW TO INPUT FLOW
VICTIM/VIOLENT	2486.2	874.9	1611.3	0.352

VICTIM/NON-VIOLENT	6345.5	2233.0	4112.5	0.352
NO VICTIM	40782.2	14351.6	26430.6	0.352
TOTAL	49613.9	17459.5	32154.4	0.352

OTHER MANPOWER - MANPOWER VARYING WITH KEY MANPOWER

TOTAL OTHER MEN AVAILABLE WAS READ IN AND DIVIDED BY TOTAL KEY MANPOWER AVAILABLE TO CALCULATE THE RATIO OF OTHER MEN PER KEY MAN

MANPOWER TYPE: MAGISTRATES

AVERAGE ANNUAL SALARY PER MAN: 8500.00

TOTAL OTHER MANPOWER: 60.0

TOTAL KEY MANPOWER: 17.0

RATIO OTHER MEN PER KEY MAN: 3.53

TOTAL SALARIES: 510000.00

NON-SALARY VARIABLE COSTS

Total non-salary variable costs are input and the costs per processed case are calculated.

NON-SALARY VARIABLE COST TYPE: PRISONER TRANSPORT

TOTAL NON-SALARY COSTS WERE READ IN AND DIVIDED BY PROCESSED FLOWS TO CALCULATE NON-SALARY COSTS PER CASE

CRIME GROUP	NON-SALARY COST	NON-SALARY COST PER CASE
VICTIM/VIOLENT	109750.00	125.44
VICTIM/NON-VIOLENT	11985.00	5.37
NO VICTIM	65257.00	4.55
TOTAL	186992.00	10.71

NON-SALARY VARIABLE COST TYPE: WITNESS/JUROR FEES

TOTAL NON-SALARY COSTS WERE READ IN AND DIVIDED BY PROCESSED FLOWS TO CALCULATE NON-SALARY COSTS PER CASE

CRIME GROUP	NON-SALARY COST	NON-SALARY COST PER CASE
VICTIM/VIOLENT	35000.00	40.00
VICTIM/NON-VIOLENT	0.0	0.0
NO VICTIM	0.0	0.0
TOTAL	35000.00	2.00

NON-SALARY FIXED COSTS

NON-SALARY FIXED COST TYPE: RENTAL - 3 COURT RMS AMOUNT: 21600.00

TOTAL STAGE COSTS

SALARY	935000.00
NON-SALARY	243592.00
TOTAL	1178592.00

OUTPUT BRANCHING RATIOS AND FLOWS

THE BRANCHING RATIOS WERE READ IN AND MULTIPLIED BY THE ABOVE PROCESSED FLOWS TO CALCULATE THE COMPUTED BRANCHING FLOWS.

BRANCH: CONVICTIONS TO STAGE: D COURT SENTENCING

THIS BRANCH HAS CASE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
VICTIM/VIOLENT	0.6400	559.9
VICTIM/NON-VIOLENT	0.6200	1384.5
NO VICTIM	0.5900	8467.4
TOTAL	0.5963	10411.8

BRANCH: ACQUITTED TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS CASE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
VICTIM/VIOLENT	0.3600	315.0
VICTIM/NON-VIOLENT	0.3800	848.6
NO VICTIM	0.4100	5884.1
TOTAL	0.4037	7047.7

The processed flows are branched to later stages.

STAGE 0 COURT SENTENCING

THIS STAGE BELONGS TO PROGRAM 2 COURTS

STAGE TYPE: ALL INPUT FLOWS ARE TO BE PROCESSED AND SENT TO OTHER STAGES, AND NO WORKLOADS, NO COSTS PER CASE, AND NO MANPOWER AND COST RESOURCES ARE TO BE READ IN OR COMPUTED.

THE CRIME GROUPING USED TO SPECIFY THE INPUT DATA IS CRIME GROUPING NUMBER 5
THE CRIME GROUPING USED FOR OUTPUT REPORTS IS CRIME GROUPING NUMBER 5
(SEE ABOVE REPORT ON DEFINITION OF CRIME GROUPINGS)

INPUT FLOWS

CRIME GROUP	COMPUTED FLOW
FELONY	1944.4
MISDEMEANOR	8467.4
TOTAL	10411.8

OUTPUT BRANCHING RATIOS AND FLOWS

THE BRANCHING RATIOS WERE READ IN AND MULTIPLIED BY THE ABOVE COMPUTED INPUT FLOWS TO CALCULATE THE COMPUTED BRANCHING FLOWS.

BRANCH: PRISONS TO STAGE: E PRISONS

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
FELONY	0.2500	486.1
MISDEMEANOR	0.0800	677.4
TOTAL	0.1117	1163.5

BRANCH: PROBATION TO STAGE: F PROBATION/PAROLE

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
FELONY	0.4500	875.0
MISDEMEANOR	0.2600	2201.5
TOTAL	0.2955	3076.5

BRANCH: SUSPENDED SENTENCE TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
FELONY	0.3000	583.3
MISDEMEANOR	0.3800	3217.6
TOTAL	0.3651	3800.9

BRANCH: FINES AND COSTS TO DROP-OUT OF C.J. SYSTEM

The Court Sentencing Stage shows a third way in which a stage may be modelled. Court sentencing is represented as an "only flow" stage; no manpower and costs are used. The Court sentencing stage uses another crime grouping.

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
FELONY	0.0500	97.2
MISDEMEANOR	0.3300	2794.2
TOTAL	0.2777	2891.5

*** WARNING: THE TOTAL FLOW OUT IS NOT EQUAL TO THE TOTAL FLOW IN FOR THIS STAGE. CHECK BRANCHING RATIOS. ***

TOTAL FLOW IN: 10411.8

TOTAL FLOW OUT: 10932.4

FLOW IN - FLOW OUT: -520.6

RATIO FLOW OUT TO IN: 1.050

This page illustrates one type of error message. The model checks whether the flow out equals the flow in. If cases and people leave a stage along separate branches (not the case for Court Sentencing), the check is made using the case branches. In the example, the flow out is not equal to the flow in because of an intentional error (an increase in persons receiving a Suspended Sentence) was introduced in the branching ratios.

STAGE E PRISONS

THIS STAGE BELONGS TO PROGRAM 4 PRISONS

STAGE TYPE: ALL INPUT FLOWS ARE TO BE PROCESSED AND SENT TO OTHER STAGES, WORKLOADS AND COSTS PER CASE ARE TO BE READ IN, AND MANPOWER AND COST RESOURCES REQUIRED ARE TO BE COMPUTED.

THE CRIME GROUPING USED TO SPECIFY THE INPUT DATA IS CRIME GROUPING NUMBER 5
THE CRIME GROUPING USED FOR OUTPUT REPORTS IS CRIME GROUPING NUMBER 5
(SEE ABOVE REPORT ON DEFINITION OF CRIME GROUPINGS)

Prisons is a compute resources stage. There are two entering flow branches. An entering flow is used to input data about prisoners on hand so that prisoners may be combined with new prisoners from prior stages during the current year to yield the total prisoner population. An entering flow is also used for prisoners from other jurisdictions. The entering flow may be input either as an overall total which is allocated by the model or by crime type.

FLOWS ENTERING FROM OUTSIDE THE C.J.S. AT THIS STAGE

DATA ON THE FLOWS ENTERING FROM OUTSIDE THE C.J.S. AT THIS STAGE WERE READ IN AND ADDED TO THE COMPUTED INPUT FLOWS FOR THIS STAGE

ENTERING BRANCH: PRISONERS ON HAND TOTAL ENTERING FLOW: 1500.0

ENTERING BRANCH: OTHER JURISDICTIONS

CRIME TYPE	ENTERING FLOW
MURDER	5.0
RAPE	0.0
ROBBERY	50.0
AGG. ASSAULT	100.0
BURGLARY	200.0
LARCENY	0.0
AUTO THEFT	50.0
DRUNKENNESS	0.0
DRUGS	0.0
OTHER	0.0
TOTAL	405.0

INPUT FLOWS

CRIME GROUP	COMPUTED FLOW
FELONY	1517.8
MISDEMEANOR	1550.7
TOTAL	3068.5

WORKLOADS

WORKLOAD: PRISONER-MONTHS

No key manpower type is explicitly mentioned so the workload is in terms of time duration a prisoner spends in prison in months.

REQUIRED TIME DURATIONS TO BE SPENT IN THIS STAGE WERE READ IN AND MULTIPLIED BY THE COMPUTED INPUT FLOWS TO CALCULATE THE TOTAL REQUIRED TIME DURATION TO BE SPENT BY ALL CASES. THE TOTAL REQUIRED TIME DURATION WAS DIVIDED BY THE NUMBER OF TIME UNITS PER YEAR TO CALCULATE THE AVERAGE POPULATION PER TIME UNIT

	REQUIRED TIME DURATION SPENT IN	TOTAL REQUIRED TIME DURATION SPENT

CRIME GROUP	THIS STAGE PER CASE IN MONS	IN THIS STAGE BY ALL CASES IN MONS
FELONY	8.500	12901.33
MISDEMEANOR	5.000	7753.48
TOTAL	6.731	20654.80

CRIME GROUP	AVERAGE POPULATION PER MONS
FELONY	1075.1
MISDEMEANOR	646.1
TOTAL	1721.2

OTHER MANPOWER

TOTAL OTHER MEN AVAILABLE WAS READ IN

With no key manpower type explicitly mentioned, other manpower may be used as a fixed manpower type.

MANPOWER TYPE: PRISON GUARDS

AVERAGE ANNUAL SALARY PER MAN: 9000.00

TOTAL OTHER MANPOWER: 200.0

TOTAL SALARIES: 1800000.00

MANPOWER TYPE: MEDICAL PERSONNEL

AVERAGE ANNUAL SALARY PER MAN: 25000.00

TOTAL OTHER MANPOWER: 10.0

TOTAL SALARIES: 250000.00

NON-SALARY VARIABLE COSTS

Non-salary variable costs are illustrated as costs per month per prisoner.

NON-SALARY VARIABLE COST TYPE: EDUCATION TUITION

THE NON-SALARY COSTS PER TIME DURATION A CASE SPENDS IN THE STAGE WERE READ IN AND MULTIPLIED BY THE TOTAL TIME DURATION FOR ALL CASES TO CALCULATE THE NON-SALARY COSTS

CRIME GROUP	NON-SALARY COST PER MONS OF TIME DURATION SPENT IN THIS STAGE	NON-SALARY COST
FELONY	1.50	19351.99
MISDEMEANOR	1.50	11630.21
TOTAL	1.50	30982.21

NON-SALARY VARIABLE COST TYPE: FOOD/CLOTHING

THE NON-SALARY COSTS PER TIME DURATION A CASE SPENDS IN THE STAGE WERE READ IN AND MULTIPLIED BY THE TOTAL TIME DURATION FOR ALL CASES TO CALCULATE THE NON-SALARY COSTS

CRIME GROUP	NON-SALARY COST PER MONS OF TIME DURATION

CRIME GROUP	SPENT IN THIS STAGE	NON-SALARY COST
FELONY	85.00	1096613.00
MISDEMEANOR	85.00	659045.69
TOTAL	85.00	1755657.00

TOTAL STAGE COSTS

SALARY	2050000.00
NON-SALARY	1786639.00
TOTAL	3836639.00

OUTPUT BRANCHING RATIOS AND FLOWS

THE BRANCHING RATIOS WERE READ IN AND MULTIPLIED BY THE ABOVE COMPUTED INPUT FLOWS TO CALCULATE THE COMPUTED BRANCHING FLOWS.

BRANCH: OUTRIGHT RELEASE TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
FELONY	0.2000	303.6
MISDEMEANOR	0.6500	1008.0
TOTAL	0.4274	1311.5

BRANCH: PAROLE TO STAGE: F PROBATION/PAROLE

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
FELONY	0.3500	531.2
MISDEMEANOR	0.3000	465.2
TOTAL	0.3247	996.4

BRANCH: CONTINUING CONFINMNT TO DROP-OUT OF C.J. SYSTEM

One of the branches from Prisons is to continuing prison confinement.

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
FELONY	0.4500	683.0
MISDEMEANOR	0.0500	77.5
TOTAL	0.2479	760.5

STAGE F PROBATION/PAROLE

THIS STAGE BELONGS TO PROGRAM 3 PROBATION

STAGE TYPE: ALL INPUT FLOWS ARE TO BE PROCESSED AND SENT TO OTHER STAGES, MANPOWER AND COST RESOURCES AVAILABLE ARE TO BE READ IN, AND WORKLOADS AND COSTS PER CASE ARE TO BE COMPUTED.

THE CRIME GROUPING USED TO SPECIFY THE INPUT DATA IS CRIME GROUPING NUMBER 6
THE CRIME GROUPING USED FOR OUTPUT REPORTS IS CRIME GROUPING NUMBER 6
(SEE ABOVE REPORT ON DEFINITION OF CRIME GROUPINGS)

Probation/Parole Stage shows the fourth way a stage may be modelled. All the flows are processed and resources available are read in and workloads and costs per case are computed.

FLOWS ENTERING FROM OUTSIDE THE C.J.S. AT THIS STAGE

DATA ON THE FLOWS ENTERING FROM OUTSIDE THE C.J.S. AT THIS STAGE WERE READ IN AND ADDED TO THE COMPUTED INPUT FLOWS FOR THIS STAGE

ENTERING BRANCH: CONTINUING SUPERVSN. TOTAL ENTERING FLOW: 2384.0

An entering flow is used to combine new probation/parole cases with cases carrying over from prior years.

INPUT FLOWS

THE ACTUAL BRANCHING FLOWS FROM THIS STAGE WERE READ IN AND ADDED TOGETHER TO CALCULATE THE ACTUAL INPUT FLOWS TO THIS STAGE

CRIME GROUP	COMPUTED FLOW	ACTUAL FLOW	DIFFERENCE
INTENSIVE	2560.5	2660.0	-99.5
GENERAL	3896.5	4590.0	-693.5
TOTAL	6457.0	7250.0	-793.0

A different crime grouping is used.

Actual branching flows from Probation/Parole were read in instead of branching ratios. The actual branching flows were added together to compute the actual input flows to Probation/Parole. A discrepancy analysis is then computed between the computed input flows from prior stages and the actual input flows. The discrepancy analysis is used to debug the flow representation of the criminal justice system.

KEY MANPOWER - MANPOWER ASSOCIATED WITH WORKLOADS

MANPOWER TYPE: PROBATION OFFICERS

AVERAGE ANNUAL SALARY PER MAN: 12500.00

TOTAL KEY MANPOWER AVAILABLE AND PROPORTIONS ASSIGNING KEY MANPOWER TO CRIME GROUPS WERE READ IN AND MULTIPLIED TO CALCULATE KEY MANPOWER AVAILABLE TO PROCESS EACH CRIME GROUP

CRIME GROUP	ASSIGNED PROPORTION	AVAILABLE MANPOWER	ASSIGNED SALARIES
INTENSIVE	0.6500	34.45	430624.94
GENERAL	0.3500	18.55	231874.81
TOTAL	1.0000	53.00	662500.00

Total key manpower available and proportions assigning the total to crime groups are input so a caseload can be computed by crime group. If the assignment proportions were not input, the caseload would be computed overall. If annual time availability were input for the key manpower type, time available per case would be computed.

WORKLOADS

THE COMPUTED INPUT FLOWS WERE DIVIDED BY KEY MANPOWER AVAILABLE TO CALCULATE THE ANNUAL NUMBER OF CASES PER KEY MAN

ANNUAL CASES PER

CRIME GROUP	KEY MANPOWER
INTENSIVE	74.3
GENERAL	210.1
TOTAL	121.8

NON-SALARY VARIABLE COSTS

NON-SALARY VARIABLE COST TYPE: PROB. OFF. TRAVEL

TOTAL NON-SALARY COSTS WERE READ IN AND DIVIDED BY COMPUTED INPUT FLOWS TO CALCULATE NON-SALARY COSTS PER CASE

Non-salary variable cost is computed per case.

NON-SALARY COST: 106000.00

NON-SALARY COST PER CASE: 16.42

NON-SALARY FIXED COSTS

NON-SALARY FIXED COST TYPE: PSY. CONTRACT SERV. AMOUNT: 75000.00

TOTAL STAGE COSTS

SALARY	662499.75
NON-SALARY	181000.00
TOTAL	843499.75

OUTPUT BRANCHING RATIOS AND FLOWS

THE ACTUAL BRANCHING FLOWS WERE READ IN, AND THE BRANCHING RATIOS WERE CALCULATED AND MULTIPLIED BY THE ABOVE COMPUTED INPUT FLOWS TO CALCULATE THE COMPUTED BRANCHING FLOWS. THE COMPUTED BRANCHING FLOWS ARE THE FLOWS THAT ENTER OTHER STAGES.

BRANCH: RELEASE TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW	ACTUAL FLOW	DIFFERENCE
INTENSIVE	0.0789	202.1	210.0	-7.9
GENERAL	0.5338	2079.8	2450.0	-370.2
TOTAL	0.3534	2282.0	2660.0	-378.0

BRANCH: VIOLATIONS TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW	ACTUAL FLOW	DIFFERENCE
INTENSIVE	0.1692	433.2	450.0	-16.8
GENERAL	0.2614	1018.7	1200.0	-181.3
TOTAL	0.2249	1451.9	1650.0	-198.1

One branch is to continuing supervision. Actual branching flows were read in. The model computes the branching ratios from the actual branching flows and then multiplies the ratios times the computed input flows to calculate the computed branching flows. A discrepancy analysis is then computed showing the difference between the computed and actual branching flows for each branch. These discrepancy analyses help debug the flow representation of the criminal justice system. After an adequate flow picture is obtained, the branching ratios are used as input to test alternative plans.

BRANCH: CONTINUING PROBATION TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW	ACTUAL FLOW	DIFFERENCE
INTENSIVE	0.7519	1925.2	2000.0	-74.8
GENERAL	0.2048	798.0	940.0	-142.0
TOTAL	0.4217	2723.1	2940.0	-216.9

PROGRAM COSTS DETAILED BY PROCESSING STAGE AND COST CATEGORY

PROGRAM 1 POLICE

STAGE	SALARY	NON-SALARY	TOTAL
A POLICE APPRE/ARREST	9826485.00	1174966.00	11001451.00
PROGRAM TOTAL	9826485.00	1174966.00	11001451.00

PROGRAM 2 COURTS

STAGE	SALARY	NON-SALARY	TOTAL
C COURT TRIAL	935000.00	243592.00	1178592.00
D COURT SENTENCING	0.0	0.0	0.0
PROGRAM TOTAL	935000.00	243592.00	1178592.00

PROGRAM 3 PROBATION

STAGE	SALARY	NON-SALARY	TOTAL
F PROBATION/PAROLE	662499.75	181000.00	843499.75
PROGRAM TOTAL	662499.75	181000.00	843499.75

PROGRAM 4 PRISONS

STAGE	SALARY	NON-SALARY	TOTAL
B DETENTION	0.0	1270489.00	1270489.00
E PRISONS	2050000.00	1786639.00	3836639.00
PROGRAM TOTAL	2050000.00	3057128.00	5107128.00

	SALARY	NON-SALARY	TOTAL
TOTAL CRIMINAL JUSTICE SYSTEM	13473984.00	4656686.00	18130656.00

Costs are grouped by program by stage by cost type.

ALTERNATIVE PLAN: 1 ALT. PLAN 1

THE PROJECT CODES OF PROJECTS TO BE INCLUDED IN THIS ALTERNATIVE PLAN WERE READ IN

THE FOLLOWING PROJECTS ARE INCLUDED IN THE ALTERNATIVE PLAN:

PROJECT CODE	PROJECT NAME
XX	ADD COURT MANPOWER
YY	SCREENING/REFERRAL

Alternative Plan #1 will combine two projects with the above Base Case. The first project, entitled "Add Court Manpower", will add 11 judges and 15 magistrates to the existing manpower types at Court Trial and will add a new other manpower type, Court Reporters (14 at 9600 each). The second project, "Screening/Referral", will divert part of the Arrest cases and Bail/ROR and Detained defendant flows from Police Apprehension/Arrest to a new stage, D.A. Screening. The D. A. Screening Stage will send cases (1) to Court Trial, (2) to a new stage, Alcoholic/Drug Referral, and (3) to release from the criminal justice system. D. A. screening also changes the Court Trial branching ratios because weaker cases are removed from the system.

STAGE A POLICE APPRE/ARREST

THIS STAGE BELONGS TO PROGRAM 1 POLICE

STAGE TYPE: ALL INPUT FLOWS ARE TO BE PROCESSED AND SENT TO OTHER STAGES, WORKLOADS AND COSTS PER CASE ARE TO BE READ IN, AND MANPOWER AND COST RESOURCES REQUIRED ARE TO BE COMPUTED.

THE CRIME GROUPING USED TO SPECIFY THE INPUT DATA IS CRIME GROUPING NUMBER 1
THE CRIME GROUPING USED FOR OUTPUT REPORTS IS CRIME GROUPING NUMBER 1
(SEE ABOVE REPORT ON DEFINITION OF CRIME GROUPINGS)

INPUT FLOWS

CRIME GROUP	COMPUTED FLOW
MURDER	58.0
RAPE	144.0
ROBBERY	208.0
AGG. ASSAULT	1828.0
BURGLARY	2530.0
LARCENY	3495.0
AUTO THEFT	1621.0
DRUNKENNESS	21744.0
DRUGS	3162.0
OTHER	17792.0
TOTAL	52582.0

WORKLOADS

WORKLOAD: POLICE HOURS

KEY MANPOWER PROCESSING TIMES REQUIRED PER CASE WERE READ IN AND MULTIPLIED BY THE COMPUTED INPUT FLOWS TO CALCULATE THE TOTAL KEY MANPOWER TIME REQUIRED TO PROCESS ALL CASES

CRIME GROUP	KEY MANPOWER PROCESSING TIME REQUIRED PER CASE IN HOURS	TOTAL KEY MANPOWER PROCESSING TIME REQUIRED FOR ALL CASES IN HOURS
MURDER	13.000	754.00
RAPE	13.000	1872.00
ROBBERY	13.000	2704.00
AGG. ASSAULT	13.000	23764.00
BURGLARY	13.000	32890.00
LARCENY	13.000	45435.00
AUTO THEFT	13.000	21073.00
DRUNKENNESS	4.000	86976.00
DRUGS	4.000	12648.00
OTHER	4.000	71168.00
TOTAL	5.692	299284.00

KEY MANPOWER - MANPOWER ASSOCIATED WITH WORKLOADS

Police Apprehension/Arrest is modelled as in the Base Case except the branching ratios for Arrests-Cases, Detained, and Bail/ROR have been reduced and two branches have been added to feed the cases and defendants to D. A. Screening Stage. (see pp. 34-35)

MANPOWER TYPE: POLICEMEN

AVERAGE ANNUAL SALARY PER MAN: 10200.00

ANNUAL HOURS AVAILABLE PER MAN: 360.

THE TOTAL KEY MANPOWER TIME REQUIRED WAS DIVIDED BY THE ANNUAL TIME AVAILABLE PER KEY MAN TO CALCULATE THE TOTAL NUMBER OF KEY MANPOWER REQUIRED

CRIME GROUP	REQUIRED MANPOWER	REQUIRED PROPORTION	REQUIRED SALARIES
MURDER	2.09	0.0025	21363.33
RAPE	5.20	0.0063	53040.00
ROBBERY	7.51	0.0090	76613.31
AGG. ASSAULT	66.01	0.0794	673313.25
BURGLARY	91.36	0.1099	931883.19
LARCENY	126.21	0.1518	1287324.00
AUTO THEFT	58.54	0.0704	597068.19
DRUNKENNESS	241.60	0.2906	2464319.00
DRUGS	35.13	0.0423	358359.94
OTHER	197.69	0.2378	2016426.00
TOTAL	831.34	1.0000	8479706.00

OTHER MANPOWER - MANPOWER VARYING WITH KEY MANPOWER

THE RATIOS OF OTHER MEN PER KEY MAN WERE READ IN AND MULTIPLIED BY THE TOTAL REQUIRED KEY MANPOWER TO CALCULATE THE TOTAL OTHER MEN REQUIRED

MANPOWER TYPE: SUPERVISORS

AVERAGE ANNUAL SALARY PER MAN: 13500.00

RATIO OTHER MEN PER KEY MAN: 0.12

TOTAL KEY MANPOWER: 831.3

TOTAL OTHER MANPOWER: 99.8

TOTAL SALARIES: 1346776.00

NON-SALARY VARIABLE COSTS

NON-SALARY VARIABLE COST TYPE: VEHICLE OPERATION

THE NON-SALARY COSTS PER KEY MANPOWER TIME WERE READ IN AND MULTIPLIED BY THE TOTAL REQUIRED KEY MANPOWER TIME TO CALCULATE TOTAL NON-SALARY COST

CRIME GROUP	NON-SALARY COST PER HOUR OF KEY MANPOWER PROCESSING TIME	NON-SALARY COST
MURDER	2.84	2141.36
RAPE	2.84	5316.48
ROBBERY	2.84	7679.36
AGG. ASSAULT	2.84	67489.69
BURGLARY	2.84	93407.56
LARCENY	2.84	129035.31
AUTO THEFT	2.84	59847.30

DRUNKENNESS	2.84	247011.75	PAGE 33
DRUGS	2.84	35920.31	
OTHER	2.84	202117.06	
TOTAL	2.84	849966.06	

NON-SALARY FIXED COSTS

NON-SALARY FIXED COST TYPE: POLICE LABORATORY AMOUNT: 325000.00

TOTAL STAGE COSTS

SALARY	9826485.00
NON-SALARY	1174966.00
TOTAL	11001451.00

OUTPUT BRANCHING RATIOS AND FLOWS

THE BRANCHING RATIOS WERE READ IN AND MULTIPLIED BY THE ABOVE COMPUTED INPUT FLOWS TO CALCULATE THE COMPUTED BRANCHING FLOWS.

BRANCH: ARRESTS - CASES TO STAGE: C COURT TRIAL

THIS BRANCH HAS CASE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
MURDER	0.4200	24.4
RAPE	0.5000	72.0
ROBBERY	0.6200	129.0
AGG. ASSAULT	0.4100	749.5
BURGLARY	0.4900	1239.7
LARCENY	0.5400	1887.3
AUTO THEFT	0.5900	956.4
DRUNKENNESS	0.3600	7827.8
DRUGS	0.1800	569.2
OTHER	0.5500	9785.6
TOTAL	0.4420	23240.8

BRANCH: NO ARRESTS - CASES TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS CASE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
MURDER	0.0500	2.9
RAPE	0.0700	10.1
ROBBERY	0.1500	31.2
AGG. ASSAULT	0.2000	365.6
BURGLARY	0.2600	657.8
LARCENY	0.2100	733.9
AUTO THEFT	0.3200	518.7
DRUNKENNESS	0.2500	5436.0
DRUGS	0.1000	316.2
OTHER	0.3000	5337.6
TOTAL	0.2550	13410.0

Branching Ratio Changes to the

Branches Leaving Police Apprehension/Arrest

Due to the Screening Project

Crime Group	Arrest Cases	Detained Defendants	Bail/ROR Defendants	D.A. Screening Cases	D.A. Screening Defendants
1. Murder	-.53	-.53	.00	.53	.53
2. Rape	-.43	-.33	-.10	.43	.43
3. Robbery	-.23	-.18	-.05	.23	.23
4. Agg. Assault	-.39	-.25	-.14	.39	.39
5. Burglary	-.25	-.06	-.19	.25	.25
6. Larceny	-.25	-.06	-.19	.25	.25
7. Auto Theft	-.09	-.01	-.08	.09	.09
8. Drunkenness	-.39	-.02	-.37	.39	.39
9. Drugs	-.72	-.12	-.60	.72	.72
10. Other	-.15	-.01	-.14	.15	.15

BRANCH: DETAINED TO STAGE: B DETENTION

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
MURDER	0.4200	24.4
RAPE	0.2300	33.1
ROBBERY	0.0700	14.6
AGG. ASSAULT	0.1500	274.2
BURGLARY	0.0900	227.7
LARCENY	0.0900	314.5
AUTO THEFT	0.0400	64.8
DRUNKENNESS	0.0100	217.4
DRUGS	0.1800	569.2
OTHER	0.0400	711.7
TOTAL	0.0466	2451.6

BRANCH: BAIL/ROR TO STAGE: C COURT TRIAL

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
MURDER	0.0	0.0
RAPE	0.2700	38.9
ROBBERY	0.5500	114.4
AGG. ASSAULT	0.2600	475.3
BURGLARY	0.4000	1012.0
LARCENY	0.4500	1572.7
AUTO THEFT	0.5500	891.5
DRUNKENNESS	0.3500	7610.4
DRUGS	0.0	0.0
OTHER	0.5100	9073.9
TOTAL	0.3954	20789.2

BRANCH: NO ARRESTS - PEOPLE TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
MURDER	0.0500	2.9
RAPE	0.0700	10.1
ROBBERY	0.1500	31.2
AGG. ASSAULT	0.2000	365.6
BURGLARY	0.2600	657.8
LARCENY	0.2100	733.9
AUTO THEFT	0.3200	518.7
DRUNKENNESS	0.2500	5436.0
DRUGS	0.1000	316.2
OTHER	0.3000	5337.6
TOTAL	0.2550	13410.0

BRANCH: D.A. SCREENING-CASES TO STAGE: G DA SCREENING

THIS BRANCH HAS CASE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
MURDER	0.5300	30.7
RAPE	0.4300	61.9
ROBBERY	0.2300	47.8

The branching ratios (same for cases and persons) show the proportion of cases, by crime group which are assumed to be handled by the District Attorney screening project in Alternative Plan #1.

AGG. ASSAULT	0.3900	712.9
BURGLARY	0.2500	632.5
LARCENY	0.2500	873.8
AUTO THEFT	0.0900	145.9
DRUNKENNESS	0.3900	8480.2
DRUGS	0.7200	2276.6
OTHER	0.1500	2668.8
TOTAL	0.3030	15931.1

BRANCH: D.A. SCREENING-PEPLE TO STAGE: G DA SCREENING

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
MURDER	0.5300	30.7
RAPE	0.4300	61.9
ROBBERY	0.2300	47.8
AGG. ASSAULT	0.3900	712.9
BURGLARY	0.2500	632.5
LARCENY	0.2500	873.8
AUTO THEFT	0.0900	145.9
DRUNKENNESS	0.3900	8480.2
DRUGS	0.7200	2276.6
OTHER	0.1500	2668.8
TOTAL	0.3030	15931.1

STAGE G DA SCREENING ,

THIS STAGE BELONGS TO PROGRAM 2 COURTS

STAGE TYPE: ALL INPUT FLOWS ARE TO BE PROCESSED AND SENT TO OTHER STAGES, WORKLOADS AND COSTS PER CASE ARE TO BE READ IN, AND MANPOWER AND COST RESOURCES REQUIRED ARE TO BE COMPUTED.

THE CRIME GROUPING USED TO SPECIFY THE INPUT DATA IS CRIME GROUPING NUMBER 4
THE CRIME GROUPING USED FOR OUTPUT REPORTS IS CRIME GROUPING NUMBER 4
(SEE ABOVE REPORT ON DEFINITION OF CRIME GROUPINGS)

INPUT FLOWS

CRIME GROUP	COMPUTED FLOW
VICTIM/VIOLENT	853.4
VICTIM/NON-VIOLENT	1652.1
NO VICTIM	13425.6
TOTAL	15931.1

WORKLOADS

WORKLOAD: ASST. DA HOURS

KEY MANPOWER PROCESSING TIMES REQUIRED PER CASE WERE READ IN AND MULTIPLIED BY THE COMPUTED INPUT FLOWS TO CALCULATE THE TOTAL KEY MANPOWER TIME REQUIRED TO PROCESS ALL CASES

CRIME GROUP	KEY MANPOWER PROCESSING TIME REQUIRED PER CASE IN HOURS	TOTAL KEY MANPOWER PROCESSING TIME REQUIRED FOR ALL CASES IN HOURS
VICTIM/VIOLENT	1.000	853.42
VICTIM/NON-VIOLENT	0.500	826.07
NO VICTIM	0.250	3356.40
TOTAL	0.316	5035.89

KEY MANPOWER - MANPOWER ASSOCIATED WITH WORKLOADS

MANPOWER TYPE: ASST. DA'S

AVERAGE ANNUAL SALARY PER MAN: 15500.00

ANNUAL HOURS AVAILABLE PER MAN: 1400.

THE TOTAL KEY MANPOWER TIME REQUIRED WAS DIVIDED BY THE ANNUAL TIME AVAILABLE PER KEY MAN TO CALCULATE THE TOTAL NUMBER OF KEY MANPOWER REQUIRED

CRIME GROUP	REQUIRED MANPOWER	REQUIRED PROPORTION	REQUIRED SALARIES
VICTIM/VIOLENT	0.61	0.1695	9448.57
VICTIM/NON-VIOLENT	0.59	0.1640	9145.77

Alternative Plan #1 includes a new stage, D. A. Screening, which is modelled as a compute resources required stage. Workload is in terms of Assistant D. A. time required per case in hours.

NO VICTIM	2.40	0.6665	37160.11
TOTAL	3.60	1.0000	55754.45

OTHER MANPOWER - MANPOWER VARYING WITH KEY MANPOWER

THE RATIOS OF OTHER MEN PER KEY MAN WERE READ IN AND MULTIPLIED BY THE TOTAL REQUIRED KEY MANPOWER TO CALCULATE THE TOTAL OTHER MEN REQUIRED

MANPOWER TYPE: SUPERVISING D.A.

AVERAGE ANNUAL SALARY PER MAN: 18000.00

RATIO OTHER MEN PER KEY MAN: 0.25

TOTAL KEY MANPOWER: 3.6

TOTAL OTHER MANPOWER: 0.9

TOTAL SALARIES: 16186.77

Other manpower and non-salary fixed costs are added as shown.

MANPOWER TYPE: SECRETARY/CLERICAL

AVERAGE ANNUAL SALARY PER MAN: 7500.00

RATIO OTHER MEN PER KEY MAN: 0.33

TOTAL KEY MANPOWER: 3.6

TOTAL OTHER MANPOWER: 1.2

TOTAL SALARIES: 8902.72

NON-SALARY FIXED COSTS

NON-SALARY FIXED COST TYPE: D.A. TRAVEL AMOUNT: 12500.00

NON-SALARY FIXED COST TYPE: PROJECT EVALUATION AMOUNT: 22500.00

TOTAL STAGE COSTS

SALARY 80843.88

NON-SALARY 35000.00

TOTAL 115843.88

OUTPUT BRANCHING RATIOS AND FLOWS

THE BRANCHING RATIOS WERE READ IN AND MULTIPLIED BY THE ABOVE COMPUTED INPUT FLOWS TO CALCULATE THE COMPUTED BRANCHING FLOWS.

D. A. Screening drops cases/defendants, send cases/defendants on to Court Trial, and Detention. Cases/defendants are also sent to an Alcoholic/ Drug Referral stage.

BRANCH: CASES NOLLE PROS TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS CASE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
VICTIM/VIOLENT	0.1000	85.3
VICTIM/NON-VIOLENT	0.1400	231.3
NO VICTIM	0.8500	11411.7
TOTAL	0.7362	11728.4

BRANCH: CASES CONTINUED TO STAGE: C COURT TRIAL

THIS BRANCH HAS CASE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
VICTIM/VIOLENT	0.9000	768.1
VICTIM/NON-VIOLENT	0.8600	1420.8
NO VICTIM	0.1500	2013.8
TOTAL	0.2638	4202.8

BRANCH: PEOPLE DISMISSED TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
VICTIM/VIOLENT	0.1000	85.3
VICTIM/NON-VIOLENT	0.1400	231.3
NO VICTIM	0.4500	6041.5
TOTAL	0.3991	6358.2

BRANCH: ALCOHOL/DRUG REFERRL TO STAGE: H ALCOHOL/DRUG REFERRL

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
VICTIM/VIOLENT	0.0	0.0
VICTIM/NON-VIOLENT	0.0	0.0
NO VICTIM	0.4000	5370.2
TOTAL	0.3371	5370.2

BRANCH: DETAINED TO STAGE: B DETENTION

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
VICTIM/VIOLENT	0.5500	469.4
VICTIM/NON-VIOLENT	0.2600	429.6
NO VICTIM	0.0200	268.5
TOTAL	0.0733	1167.4

BRANCH: BAIL/ROR TO STAGE: C COURT TRIAL

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
VICTIM/VIOLENT	0.3500	298.7
VICTIM/NON-VIOLENT	0.6000	991.3
NO VICTIM	0.1300	1745.3
TOTAL	0.1905	3035.3

STAGE H ALCOHOL/DRUG REFERRL

*** WARNING: IMPROPER PROGRAM CODE (0). THE COSTS OF THIS STAGE WILL NOT BE ASSIGNED TO ANY PROGRAM. ***

STAGE TYPE: ALL INPUT FLOWS ARE TO BE PROCESSED AND SENT TO OTHER STAGES, MANPOWER AND COST RESOURCES AVAILABLE ARE TO BE READ IN, AND WORKLOADS AND COSTS PER CASE ARE TO BE COMPUTED.

THE CRIME GROUPING USED TO SPECIFY THE INPUT DATA IS CRIME GROUPING NUMBER 6
THE CRIME GROUPING USED FOR OUTPUT REPORTS IS CRIME GROUPING NUMBER 6
(SEE ABOVE REPORT ON DEFINITION OF CRIME GROUPINGS)

INPUT FLOWS

CRIME GROUP	COMPUTED FLOW
INTENSIVE	4302.7
GENERAL	1067.5
TOTAL	5370.2

KEY MANPOWER - MANPOWER ASSOCIATED WITH WORKLOADS

MANPOWER TYPE: PSYCHOLOGISTS

AVERAGE ANNUAL SALARY PER MAN: 18500.00

ANNUAL HOURS AVAILABLE PER MAN: 1450.

TOTAL KEY MANPOWER AVAILABLE WAS READ IN

TOTAL KEY MANPOWER AVAILABLE: 6.0

TOTAL ASSIGNED SALARIES: 111000.00

WORKLOADS

ANNUAL TIME AVAILABLE PER KEY MAN WAS MULTIPLIED BY KEY MANPOWER AVAILABLE TO CALCULATE TOTAL KEY MANPOWER TIME AVAILABLE TO PROCESS CASES. TOTAL TIME AVAILABLE WAS DIVIDED BY COMPUTED INPUT FLOWS TO CALCULATE THE KEY MANPOWER TIME AVAILABLE TO PROCESS EACH CASE

TOTAL KEY MANPOWER TIME AVAILABLE TO PROCESS ALL CASES IN HOURS: 8700.00

KEY MANPOWER TIME AVAILABLE PER CASE IN HOURS: 1.620

OTHER MANPOWER - MANPOWER VARYING WITH KEY MANPOWER

TOTAL OTHER MEN AVAILABLE WAS READ IN AND DIVIDED BY TOTAL KEY MANPOWER AVAILABLE TO CALCULATE THE RATIO OF OTHER MEN PER KEY MAN

MANPOWER TYPE: MEDICAL DOCTORS

Alternative Plan #1 also adds an Alcohol/Drug Referral stage. The costs of this stage are not to be added to the criminal justice system costs, so no program code was given to the stage. Failure to allocate the manpower and non-salary costs added resulted in the warning message shown. Alcoholic/Drug Referral stage is modelled as a compute workload stage. Key manpower available is input and the time available per case is computed. Other manpower and fixed costs are shown.

AVERAGE ANNUAL SALARY PER MAN: 22500.00

TOTAL OTHER MANPOWER: 2.0

TOTAL KEY MANPOWER: 6.0

RATIO OTHER MEN PER KEY MAN: 0.33

TOTAL SALARIES: 45000.00

MANPOWER TYPE: PARA-MEDICAL

AVERAGE ANNUAL SALARY PER MAN: 8500.00

TOTAL OTHER MANPOWER: 6.0

TOTAL KEY MANPOWER: 6.0

RATIO OTHER MEN PER KEY MAN: 1.00

TOTAL SALARIES: 51000.00

NON-SALARY FIXED COSTS

NON-SALARY FIXED COST TYPE: FACILITIES RENTAL AMOUNT: 65000.00

NON-SALARY FIXED COST TYPE: LABORATORY COSTS AMOUNT: 80000.00

TOTAL STAGE COSTS

SALARY	207000.00
NON-SALARY	145000.00
TOTAL	352000.00

OUTPUT BRANCHING RATIOS AND FLOWS

THE BRANCHING RATIOS WERE READ IN AND MULTIPLIED BY THE ABOVE COMPUTED INPUT FLOWS TO CALCULATE THE COMPUTED BRANCHING FLOWS.

BRANCH: RELEASE TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
INTENSIVE	0.9000	3872.4
GENERAL	0.1500	160.1
TOTAL	0.7509	4032.6

BRANCH: RETURN TO COURTS TO STAGE: C COURT TRIAL

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW

As a result of the referral program, some persons are shown as released from the Alcoholic/ Drug Referral stage; others, for whom the program was not successful, are returned to Court Trial.

INTENSIVE	0.1000	430.3
GENERAL	0.8500	907.4
TOTAL	0.2491	1337.7

STAGE 8 DETENTION

THIS STAGE BELONGS TO PROGRAM 4 PRISONS

STAGE TYPE: ALL INPUT FLOWS ARE TO BE PROCESSED AND SENT TO OTHER STAGES, WORKLOADS AND COSTS PER CASE ARE TO BE READ IN, AND MANPOWER AND COST RESOURCES REQUIRED ARE TO BE COMPUTED.

Detention is modelled as before, but the impact of the diversion projects resulting in fewer defendants in the input flow.

THE CRIME GROUPING USED TO SPECIFY THE INPUT DATA IS CRIME GROUPING NUMBER 2
THE CRIME GROUPING USED FOR OUTPUT REPORTS IS CRIME GROUPING NUMBER 2
(SEE ABOVE REPORT ON DEFINITION OF CRIME GROUPINGS)

INPUT FLOWS

CRIME GROUP	COMPUTED FLOW
ALL CRIMES	3619.1

WORKLOADS

WORKLOAD: DETENTION DAYS

REQUIRED TIME DURATIONS TO BE SPENT IN THIS STAGE WERE READ IN AND MULTIPLIED BY THE COMPUTED INPUT FLOWS TO CALCULATE THE TOTAL REQUIRED TIME DURATION TO BE SPENT BY ALL CASES. THE TOTAL REQUIRED TIME DURATION WAS DIVIDED BY THE NUMBER OF TIME UNITS PER YEAR TO CALCULATE THE AVERAGE POPULATION PER TIME UNIT

CRIME GROUP	REQUIRED TIME DURATION SPENT IN THIS STAGE PER CASE IN DAYS	TOTAL REQUIRED TIME DURATION SPENT IN THIS STAGE BY ALL CASES IN DAYS
ALL CRIMES	64.250	232524.25

CRIME GROUP	AVERAGE POPULATION PER DAYS
ALL CRIMES	637.1

NON-SALARY VARIABLE COSTS

NON-SALARY VARIABLE COST TYPE: TOTAL COST/DAY

THE NON-SALARY COSTS PER TIME DURATION A CASE SPENDS IN THE STAGE WERE READ IN AND MULTIPLIED BY THE TOTAL TIME DURATION FOR ALL CASES TO CALCULATE THE NON-SALARY COSTS

CRIME GROUP	NON-SALARY COST PER DAYS OF TIME DURATION SPENT IN THIS STAGE	NON-SALARY COST
ALL CRIMES	4.50	1046359.81

TOTAL STAGE COSTS

SALARY	0.0
NON-SALARY	1046359.81
TOTAL	1046359.81

OUTPUT BRANCHING RATIOS AND FLOWS

THE BRANCHING RATIOS WERE READ IN AND MULTIPLIED BY THE ABOVE COMPUTED INPUT FLOWS TO CALCULATE THE COMPUTED BRANCHING FLOWS.

BRANCH: COURTS TO STAGE: C COURT TRIAL

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
ALL CRIMES	1.0000	3619.1

STAGE C COURT TRIAL

THIS STAGE BELONGS TO PROGRAM 2 COURTS

STAGE TYPE: WORKLOADS AND COSTS PER CASE ARE TO BE READ IN, MANPOWER AND COST RESOURCES AVAILABLE ARE TO BE READ IN, AND INPUT FLOWS THAT ARE ABLE TO BE PROCESSED AND SENT TO OTHER STAGES WITHIN THE AVAILABLE RESOURCES ARE TO BE COMPUTED AND THE REMAINING FLOWS, IF ANY, ARE TO BE BACKLOGGED.

THE CRIME GROUPING USED TO SPECIFY THE INPUT DATA IS CRIME GROUPING NUMBER 4
THE CRIME GROUPING USED FOR OUTPUT REPORTS IS CRIME GROUPING NUMBER 4
(SEE ABOVE REPORT ON DEFINITION OF CRIME GROUPINGS)

FLOWS ENTERING FROM OUTSIDE THE C.J.S. AT THIS STAGE

DATA ON THE FLOWS ENTERING FROM OUTSIDE THE C.J.S. AT THIS STAGE WERE READ IN AND ADDED TO THE COMPUTED INPUT FLOWS FOR THIS STAGE

ENTERING BRANCH: RCRDS ENT/NEW TRIAL

CRIME TYPE	ENTERING FLOW
MURDER	26.0
RAPE	35.0
ROBBERY	44.0
AGG. ASSAULT	53.0
BURGLARY	111.0
LARCENY	65.0
AUTO THEFT	34.0
DRUNKENNESS	12.0
DRUGS	83.0
OTHER	79.0
TOTAL	542.0

BEGINNING BACKLOG

DATA ON THE BEGINNING BACKLOG WERE READ IN AND ADDED TO THE COMPUTED INPUT FLOWS FOR THIS STAGE

CRIME GROUP	BEGINNING BACKLOG
VICTIM/VIOLENT	500.0
VICTIM/NON-VIOLENT	400.0
NO VICTIM	9000.0
TOTAL	9900.0

INPUT FLOWS

CRIME GROUP	COMPUTED FLOW
VICTIM/VIOLENT	2400.9
VICTIM/NON-VIOLENT	6114.2
NO VICTIM	30708.1

CONTINUED

1 OF 2

WORKLOADS

WORKLOAD: JUDGE HOURS

KEY MANPOWER PROCESSING TIMES REQUIRED PER CASE WERE READ IN AND MULTIPLIED BY THE COMPUTED INPUT FLOWS TO CALCULATE THE TOTAL KEY MANPOWER TIME REQUIRED TO PROCESS ALL CASES

CRIME GROUP	KEY MANPOWER PROCESSING TIME REQUIRED PER CASE IN HOURS	TOTAL KEY MANPOWER PROCESSING TIME REQUIRED FOR ALL CASES IN HOURS
VICTIM/VIOLENT	8.000	19207.01
VICTIM/NON-VIOLENT	3.000	18342.68
NO VICTIM	1.000	30708.08
TOTAL	1.740	68257.75

KEY MANPOWER - MANPOWER ASSOCIATED WITH WORKLOADS

MANPOWER TYPE: JUDGES

AVERAGE ANNUAL SALARY PER MAN: 25000.00

ANNUAL HOURS AVAILABLE PER MAN: 1650.

THE TOTAL KEY MANPOWER TIME REQUIRED WAS DIVIDED BY THE ANNUAL TIME AVAILABLE PER KEY MAN TO CALCULATE THE TOTAL NUMBER OF KEY MANPOWER REQUIRED

CRIME GROUP	REQUIRED MANPOWER	REQUIRED PROPORTION	REQUIRED SALARIES
VICTIM/VIOLENT	11.64	0.2814	291015.31
VICTIM/NON-VIOLENT	11.12	0.2687	277919.44
NO VICTIM	18.61	0.4499	465273.63
TOTAL	41.37	1.0000	1034207.88

TOTAL KEY MANPOWER AVAILABLE WAS READ IN

TOTAL KEY MANPOWER AVAILABLE: 28.0

TOTAL ASSIGNED SALARIES: 700000.00

TOTAL KEY MANPOWER REQUIRED LESS TOTAL KEY MANPOWER AVAILABLE: 13.4

RATIO KEY MANPOWER AVAILABLE TO REQUIRED: 0.677

Court Trial has fewer new cases and more manpower (17 to 28 judges, 60 to 75 magistrates, and 14 court reporters) so that .677 of the cases will be processed, up from .352 in the Base Case.

PROCESSED FLOWS

CRIME GROUP	COMPUTED INPUT FLOW	PROCESSED FLOW	ENDING BACKLOG	RATIO PROCESSED FLOW TO INPUT FLOW
VICTIM/VIOLENT	2400.9	1625.0	775.9	0.677

VICTIM/NON-VIOLENT	6114.2	4138.4	1975.8	0.677
NO VICTIM	30708.1	20784.6	9923.4	0.677
TOTAL	39223.2	26548.1	12675.1	0.677

OTHER MANPOWER - MANPOWER VARYING WITH KEY MANPOWER

TOTAL OTHER MEN AVAILABLE WAS READ IN AND DIVIDED BY TOTAL KEY MANPOWER AVAILABLE TO CALCULATE THE RATIO OF OTHER MEN PER KEY MAN

MANPOWER TYPE: MAGISTRATES

AVERAGE ANNUAL SALARY PER MAN: 8500.00

TOTAL OTHER MANPOWER: 75.0

TOTAL KEY MANPOWER: 28.0

RATIO OTHER MEN PER KEY MAN: 2.68

TOTAL SALARIES: 637500.00

MANPOWER TYPE: COURT REPORTERS

AVERAGE ANNUAL SALARY PER MAN: 9600.00

TOTAL OTHER MANPOWER: 14.0

TOTAL KEY MANPOWER: 28.0

RATIO OTHER MEN PER KEY MAN: 0.50

TOTAL SALARIES: 134400.00

NON-SALARY VARIABLE COSTS

NON-SALARY VARIABLE COST TYPE: PRISONER TRANSPORT

TOTAL NON-SALARY COSTS WERE READ IN AND DIVIDED BY COMPUTED INPUT FLOWS TO CALCULATE NON-SALARY COSTS PER CASE

CRIME GROUP	NON-SALARY COST	NON-SALARY COST PER CASE
VICTIM/VIOLENT	109750.00	67.54
VICTIM/NON-VIOLENT	11985.00	2.90
NO VICTIM	65257.00	3.14
TOTAL	186992.00	7.04

NON-SALARY VARIABLE COST TYPE: WITNESS/JUROR FEES

TOTAL NON-SALARY COSTS WERE READ IN AND DIVIDED BY COMPUTED INPUT FLOWS TO CALCULATE NON-SALARY COSTS PER CASE

CRIME GROUP	NON-SALARY COST	NON-SALARY COST PER CASE
VICTIM/VIOLENT	35000.00	21.54
VICTIM/NON-VIOLENT	0.0	0.0
NO VICTIM	0.0	0.0

TOTAL 35000.00 1.32

NON-SALARY FIXED COSTS

NON-SALARY FIXED COST TYPE: RENTAL - 3 COURT RMS AMOUNT: 21600.00

TOTAL STAGE COSTS

SALARY	1471900.00
NON-SALARY	243592.00
TOTAL	1715492.00

OUTPUT BRANCHING RATIOS AND FLOWS

THE BRANCHING RATIOS WERE READ IN AND MULTIPLIED BY THE ABOVE PROCESSED FLOWS TO CALCULATE THE COMPUTED BRANCHING FLOWS.

BRANCH: CONVICTIONS TO STAGE: D COURT SENTENCING

THIS BRANCH HAS CASE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
VICTIM/VIOLENT	0.7800	1267.5
VICTIM/NON-VIOLENT	0.7800	3227.9
NO VICTIM	0.7100	14757.1
TOTAL	0.7252	19252.6

BRANCH: ACQUITTED TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS CASE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
VICTIM/VIOLENT	0.2200	357.5
VICTIM/NON-VIOLENT	0.2200	910.4
NO VICTIM	0.2900	6027.5
TOTAL	0.2748	7295.5

The D. A. Screening project also changes the branching ratios from Court Trial because the screening removes the weaker cases from the system. The following branching ratio changes were input:

Crime Group	Convictions	Acquitted
Victim/Violent	+.14	-.14
Victim/Non-Violent	+.16	-.16
No Victim	+.12	-.12

STAGE D COURT SENTENCING

THIS STAGE BELONGS TO PROGRAM 2 COURTS

STAGE TYPE: ALL INPUT FLOWS ARE TO BE PROCESSED AND SENT TO OTHER STAGES, AND NO WORKLOADS, NO COSTS PER CASE, AND NO MANPOWER AND COST RESOURCES ARE TO BE READ IN OR COMPUTED.

Court Screening has more cases in its input flow because of the added manpower at Court Trial.

THE CRIME GROUPING USED TO SPECIFY THE INPUT DATA IS CRIME GROUPING NUMBER 5
THE CRIME GROUPING USED FOR OUTPUT REPORTS IS CRIME GROUPING NUMBER 5
(SEE ABOVE REPORT ON DEFINITION OF CRIME GROUPINGS)

INPUT FLOWS

CRIME GROUP	COMPUTED FLOW
FELONY	4495.5
MISDEMEANOR	14757.1
TOTAL	19252.6

OUTPUT BRANCHING RATIOS AND FLOWS

THE BRANCHING RATIOS WERE READ IN AND MULTIPLIED BY THE ABOVE COMPUTED INPUT FLOWS TO CALCULATE THE COMPUTED BRANCHING FLOWS.

BRANCH: PRISONS TO STAGE: E PRISONS

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
FELONY	0.2500	1123.9
MISDEMEANOR	0.0800	1180.6
TOTAL	0.1197	2304.4

BRANCH: PROBATION TO STAGE: F PROBATION/PAROLE

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
FELONY	0.4500	2023.0
MISDEMEANOR	0.2600	3836.8
TOTAL	0.3044	5859.8

BRANCH: SUSPENDED SENTENCE TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
FELONY	0.3000	1348.6
MISDEMEANOR	0.3800	5607.7
TOTAL	0.3613	6956.3

BRANCH: FINES AND COSTS TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
FELONY	0.0500	224.8
MISDEMEANOR	0.3300	4869.8
TOTAL	0.2646	5094.6

*** WARNING: THE TOTAL FLOW OUT IS NOT EQUAL TO THE TOTAL FLOW IN FOR THIS STAGE. CHECK BRANCHING RATIOS. ***

TOTAL FLOW IN: 19252.6

TOTAL FLOW OUT: 20215.2

FLOW IN - FLOW OUT: -962.6

RATIO FLOW OUT TO IN: 1.050

STAGE E PRISONS

THIS STAGE BELONGS TO PROGRAM 4 PRISONS

STAGE TYPE: ALL INPUT FLOWS ARE TO BE PROCESSED AND SENT TO OTHER STAGES, WORKLOADS AND COSTS PER CASE ARE TO BE READ IN, AND MANPOWER AND COST RESOURCES REQUIRED ARE TO BE COMPUTED.

THE CRIME GROUPING USED TO SPECIFY THE INPUT DATA IS CRIME GROUPING NUMBER 5
THE CRIME GROUPING USED FOR OUTPUT REPORTS IS CRIME GROUPING NUMBER 5
(SEE ABOVE REPORT ON DEFINITION OF CRIME GROUPINGS)

FLOWS ENTERING FROM OUTSIDE THE C.J.S. AT THIS STAGE

DATA ON THE FLOWS ENTERING FROM OUTSIDE THE C.J.S. AT THIS STAGE WERE READ IN AND ADDED TO THE COMPUTED INPUT FLOWS FOR THIS STAGE

ENTERING BRANCH: PRISONERS ON HAND TOTAL ENTERING FLOW: 1500.0

ENTERING BRANCH: OTHER JURISDICTIONS

CRIME TYPE	ENTERING FLOW
MURDER	5.0
RAPE	0.0
ROBBERY	50.0
AGG. ASSAULT	100.0
BURGLARY	200.0
LARCENY	0.0
AUTO THEFT	50.0
DRUNKENNESS	0.0
DRUGS	0.0
OTHER	0.0
TOTAL	405.0

INPUT FLOWS

CRIME GROUP	COMPUTED FLOW
FELONY	2260.4
MISDEMEANOR	1949.0
TOTAL	4209.4

WORKLOADS

WORKLOAD: PRISONER-MONTHS

REQUIRED TIME DURATIONS TO BE SPENT IN THIS STAGE WERE READ IN AND MULTIPLIED BY THE COMPUTED INPUT FLOWS TO CALCULATE THE TOTAL REQUIRED TIME DURATION TO BE SPENT BY ALL CASES. THE TOTAL REQUIRED TIME DURATION WAS DIVIDED BY THE NUMBER OF TIME UNITS PER YEAR TO CALCULATE THE AVERAGE POPULATION PER TIME UNIT

	REQUIRED TIME DURATION SPENT IN	TOTAL REQUIRED TIME DURATION SPENT

Prisons has more new prisoners because of the increased number of cases being processed at Court Trial and Sentencing stages, with an associated increase in costs.

CRIME GROUP	THIS STAGE PER CASE IN MONS	IN THIS STAGE BY ALL CASES IN MONS
FELONY	8.500	19213.49
MISDEMEANOR	5.000	9745.10
TOTAL	6.879	28958.59

CRIME GROUP	AVERAGE POPULATION PER MONS
FELONY	1601.1
MISDEMEANOR	812.1
TOTAL	2413.2

OTHER MANPOWER

TOTAL OTHER MEN AVAILABLE WAS READ IN

MANPOWER TYPE: PRISON GUARDS

AVERAGE ANNUAL SALARY PER MAN: 9000.00

TOTAL OTHER MANPOWER: 200.0

TOTAL SALARIES: 1800000.00

MANPOWER TYPE: MEDICAL PERSONNEL

AVERAGE ANNUAL SALARY PER MAN: 25000.00

TOTAL OTHER MANPOWER: 10.0

TOTAL SALARIES: 250000.00

NON-SALARY VARIABLE COSTS

NON-SALARY VARIABLE COST TYPE: EDUCATION TUITION

THE NON-SALARY COSTS PER TIME DURATION A CASE SPENDS IN THE STAGE WERE READ IN AND MULTIPLIED BY THE TOTAL TIME DURATION FOR ALL CASES TO CALCULATE THE NON-SALARY COSTS

CRIME GROUP	NON-SALARY COST PER MONS OF TIME DURATION SPENT IN THIS STAGE	NON-SALARY COST
FELONY	1.50	28820.23
MISDEMEANOR	1.50	14617.65
TOTAL	1.50	43437.89

NON-SALARY VARIABLE COST TYPE: FOOD/CLOTHING

THE NON-SALARY COSTS PER TIME DURATION A CASE SPENDS IN THE STAGE WERE READ IN AND MULTIPLIED BY THE TOTAL TIME DURATION FOR ALL CASES TO CALCULATE THE NON-SALARY COSTS

	NON-SALARY COST PER MONS OF TIME DURATION

CRIME GROUP	SPENT IN THIS STAGE	NON-SALARY COST
FELONY	85.00	1633146.00
MISDEMEANOR	85.00	828333.81
TOTAL	85.00	2461479.00

TOTAL STAGE COSTS

SALARY	2050000.00
NON-SALARY	2504916.00
TOTAL	4554916.00

OUTPUT BRANCHING RATIOS AND FLOWS

THE BRANCHING RATIOS WERE READ IN AND MULTIPLIED BY THE ABOVE COMPUTED INPUT FLOWS TO CALCULATE THE COMPUTED BRANCHING FLOWS.

BRANCH: OUTRIGHT RELEASE TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
FELONY	0.2000	452.1
MISDEMEANOR	0.6500	1266.9
TOTAL	0.4084	1718.9

BRANCH: PAROLE TO STAGE: F PROBATION/PAROLE

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
FELONY	0.3500	791.1
MISDEMEANOR	0.3000	584.7
TOTAL	0.3268	1375.8

BRANCH: CONTINUING CONFINMNT TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW
FELONY	0.4500	1017.2
MISDEMEANOR	0.0500	97.5
TOTAL	0.2648	1114.6

STAGE F PROBATION/PAROLE

THIS STAGE BELONGS TO PROGRAM 3 PROBATION

STAGE TYPE: ALL INPUT FLOWS ARE TO BE PROCESSED AND SENT TO OTHER STAGES,
MANPOWER AND COST RESOURCES AVAILABLE ARE TO BE READ IN, AND
WORKLOADS AND COSTS PER CASE ARE TO BE COMPUTED.

THE CRIME GROUPING USED TO SPECIFY THE INPUT DATA IS CRIME GROUPING NUMBER 6
THE CRIME GROUPING USED FOR OUTPUT REPORTS IS CRIME GROUPING NUMBER 6
(SEE ABOVE REPORT ON DEFINITION OF CRIME GROUPINGS)

FLOWS ENTERING FROM OUTSIDE THE C.J.S. AT THIS STAGE

DATA ON THE FLOWS ENTERING FROM OUTSIDE THE C.J.S. AT THIS STAGE WERE READ IN AND ADDED TO THE COMPUTED INPUT FLOWS FOR THIS STAGE

ENTERING BRANCH: CONTINUING SUPERVSN. TOTAL ENTERING FLOW: 2384.0

INPUT FLOWS

THE ACTUAL BRANCHING FLOWS FROM THIS STAGE WERE READ IN AND ADDED TOGETHER TO CALCULATE THE ACTUAL INPUT FLOWS TO THIS STAGE

CRIME GROUP	COMPUTED FLOW	ACTUAL FLOW	DIFFERENCE
INTENSIVE	2853.0	2660.0	193.0
GENERAL	6766.7	4590.0	2176.7
TOTAL	9619.6	7250.0	2369.6

KEY MANPOWER - MANPOWER ASSOCIATED WITH WORKLOADS

MANPOWER TYPE: PROBATION OFFICERS

AVERAGE ANNUAL SALARY PER MAN: 12500.00

TOTAL KEY MANPOWER AVAILABLE AND PROPORTIONS ASSIGNING KEY MANPOWER TO CRIME GROUPS WERE READ IN AND MULTIPLIED TO CALCULATE KEY MANPOWER AVAILABLE TO PROCESS EACH CRIME GROUP

CRIME GROUP	ASSIGNED PROPORTION	AVAILABLE MANPOWER	ASSIGNED SALARIES
INTENSIVE	0.6500	34.45	430624.94
GENERAL	0.3500	18.55	231874.81
TOTAL	1.0000	53.00	662500.00

WORKLOADS

THE COMPUTED INPUT FLOWS WERE DIVIDED BY KEY MANPOWER AVAILABLE TO CALCULATE THE ANNUAL NUMBER OF CASES PER KEY MAN

ANNUAL CASES PER

Probation/Parole has more cases because of the increased number of cases being processed at Court Trial and Sentencing stages, with the associated increase in caseload.

CRIME GROUP	KEY MANPOWER
INTENSIVE	82.8
GENERAL	364.8
TOTAL	181.5

NON-SALARY VARIABLE COSTS

NON-SALARY VARIABLE COST TYPE: PROB. OFF. TRAVEL

TOTAL NON-SALARY COSTS WERE READ IN AND DIVIDED BY COMPUTED INPUT FLOWS TO CALCULATE NON-SALARY COSTS PER CASE

NON-SALARY COST: 106000.00

NON-SALARY COST PER CASE: 11.02

NON-SALARY FIXED COSTS

NON-SALARY FIXED COST TYPE: PSY. CONTRACT SERV. AMOUNT: 75000.00

TOTAL STAGE COSTS

SALARY	662499.75
NON-SALARY	181000.00
TOTAL	843499.75

OUTPUT BRANCHING RATIOS AND FLOWS

THE ACTUAL BRANCHING FLOWS WERE READ IN, AND THE BRANCHING RATIOS WERE CALCULATED AND MULTIPLIED BY THE ABOVE COMPUTED INPUT FLOWS TO CALCULATE THE COMPUTED BRANCHING FLOWS. THE COMPUTED BRANCHING FLOWS ARE THE FLOWS THAT ENTER OTHER STAGES.

BRANCH: RELEASE TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW	ACTUAL FLOW	DIFFERENCE
INTENSIVE	0.0789	225.2	210.0	15.2
GENERAL	0.5338	3611.8	2450.0	1161.8
TOTAL	0.3989	3837.1	2660.0	1177.1

BRANCH: VIOLATIONS TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW	ACTUAL FLOW	DIFFERENCE
INTENSIVE	0.1692	482.6	450.0	32.6
GENERAL	0.2614	1769.1	1200.0	569.1
TOTAL	0.2341	2251.7	1650.0	601.7

BRANCH: CONTINUING PROBATION TO DROP-OUT OF C.J. SYSTEM

THIS BRANCH HAS PEOPLE FLOW.

CRIME GROUP	RATIO	COMPUTED FLOW	ACTUAL FLOW	DIFFERENCE
INTENSIVE	0.7519	2145.1	2000.0	145.1
GENERAL	0.2048	1385.8	940.0	445.8
TOTAL	0.3670	3530.9	2940.0	590.9

PROGRAM COSTS DETAILED BY PROCESSING STAGE AND COST CATEGORY

STAGE H ALCOHOL/DRUG REFERRL WAS NOT ASSIGNED TO A PROGRAM.

The Alcoholic/Drug Referral stage costs were not assigned to any program because they are considered outside the criminal justice system.

PROGRAM 1 POLICE

STAGE	SALARY	NON-SALARY	TOTAL
A POLICE APPRF/ARREST	9826485.00	1174966.00	11001451.00
PROGRAM TOTAL	9826485.00	1174966.00	11001451.00

PROGRAM 2 COURTS

STAGE	SALARY	NON-SALARY	TOTAL
C COURT TRIAL	1471900.00	243592.00	1715492.00
D COURT SENTENCING	0.0	0.0	0.0
G DA SCREENING	80843.88	35000.00	115843.88
PROGRAM TOTAL	1552743.00	278592.00	1831335.00

PROGRAM 3 PROBATION

STAGE	SALARY	NON-SALARY	TOTAL
F PROBATION/PAROLE	662499.75	181000.00	843499.75
PROGRAM TOTAL	662499.75	181000.00	843499.75

PROGRAM 4 PRISONS

STAGE	SALARY	NON-SALARY	TOTAL
B DETENTION	0.0	1046359.81	1046359.81
F PRISONS	2050000.00	2504916.00	4554916.00
PROGRAM TOTAL	2050000.00	3551275.00	5601275.00

	SALARY	NON-SALARY	TOTAL
TOTAL CRIMINAL JUSTICE SYSTEM	14091727.00	5185833.00	19277552.00

Table I

Comparison of Key Indicators of the Operation

of the Sample Philadelphia/Alaska Criminal Justice System

in the Base Case and Alternative Plan I

Indicator or Operating Characteristic	Status in the Base Case	Status in the Alternative Plan	Analysis and/or Evaluation
1. Input flow, average population of detentioners, and costs associated with detention	Detentioners held of 4,394, average daily population of 773.5, total cost of $1,270,489 (pp. 15-16)	Detentioners held of 3,619, average daily population of 637.1, reduced total cost of $1,046,359 (pp. 42-43)	-Change results from District Attorney screening, subsequent transfer of defendants screened to Alcohol/Drug Referral, with no return of referral cases to detention
2. Proportion of reported crimes dropped prior to Court Trial as a result of Police decision, District Attorney screening, and subsequent Alcohol/Drug Referral, by crime grouping #4 (see p. 8)	Victim-Violent---------- 19.76% Victim-Non-violent---- 25.00% No Victim------------- 25.98%	23.49% 28.00% 49.57%	-This computation involves the cases dropped without arrest by Police (pp.13-33) cases/persons screened by District Attorney (pp. 34-35), cases dropped from the system or referred to Alcohol/Drug Referral (p.38), and cases/persons not returned to the Courts from the Referral stage (p.40).
3. Input flow, (from previous stages) to Court Trial, ratio of key manpower available to the manpower required to process the total flow, total backlog, and associated salary/non-salary costs	Flow In---------- 49,614 Ratio---------- .352 Backlog---------- 32,154 Salary Cost----------$935,000 Non-Salary Cost-------$243,592 (pp. 17-20)	39,223 .677 12,675 $1,471,900 243,592 (pp.44-47)	-Changes are the result of reduction in flows for all crimes (but particularly victimless crimes), and the project to add court manpower

Indicator or Operating Characteristic		Status in the Base Case	Status in the Alternative Plan	Analysis and/or Evaluation
4. Conviction rate at Court Trial	Victim-Violent	64%	78%	-Improved conviction rate is assumed to result from District Attorney screening of major crimes that are defective for serious reasons, and diversion of less serious alcohol and drug offenses
	Victim-Non-Violent	62%	78%	
	No Victim	59%	71%	
	Overall	59.63%	72.52%	
		(p.20)	(p.47)	
5. Input flow to Court Sentencing, Prisons, and Probation (from previous stages)	Court Sentencing	10,412(p.21)	19,253(p.48)	-Change results from shift in conviction rates resulting from District Attorney screening, and the increase in case/defendant flow processed by the Courts
	Prisons	3,068(p.23)	4,209(p.50)	
	Probation	6,457(p.26)	9,620(p.53)	
6. Prisons average daily population, and non-salary variable costs	ADP	1,721.2	2,413.2	-Continuing result of changes in branching ratios from projects added in Alternative Plan #1
	Non-Salary Cost	$1,786,639	$2,504,916	
		(pp.23-25)	(pp.50-52)	
7. Probation caseload, by general and intensive supervision	General	210.1	364.8	-The high general caseload results from the assignment proportion of probation officers to general (only 35%) and a considerable number of "non-reporting" probationers in that category. Nevertheless the results of the projects included in Alternative Plan #1 suggest the need for augmentation in Probation operations.
8. Overall and Stage Costs	Police	$11,001,451.00	$11,001,451.00	-The budgetary increases are the result of both the (1) projects added to the Base Case and (2) new costs calculated which vary with the cases/defendants moving through the CJ system
	Courts	1,178,592.00	1,831,335.00	
	Probation	843,500.00	843,500.00	
	Prisons	5,258,335.00	5,601,275.00	
	Total	$18,283,352.00	$19,277,552.00	
		(p.29)	(p.56)	

under its current policies, programs, and projects, which we call the "base case"
- to design new projects and modify or discontinue old policies, programs, and projects -- in order to close the gaps between desired and expected outcomes
- to predict the feasibility and the expected future outcomes under current policy, programs, and projects as modified by a combination of new projects, which we call the "test case" or alternative plan
- to select from among all the combinations of new projects that feasible set of projects which comes as close as possible to meeting desired future outcomes

Program and project structures are used to express the content of the base case or alternative plan. Revenue and manpower structures are used to express the feasibility of the base case or alternative plan. Indicators are used to express current status, desired future outcomes, and expected future outcomes of a base case or alternative plan; objectives are stated in terms of the gaps to be closed between desired and expected outcomes. A computer simulation model is used to predict the feasibility and expected indicator levels of the base case and alternative plans.

The PHILJIM model was only one part of the total work effort of Government Studies & Systems in developing a comprehensive criminal justice planning system for the City of Philadelphia. (Only work on the model was undertaken for the State of Alaska).

Designing and installing a comprehensive planning system is more complex and time consuming than designing a simulation model. The planning system concept is essential because present simulation models of social systems cannot predict all the indicators that are of concern to planning. The planning system must combine the simulation model's prediction of some indicators with the subjective prediction of other indicators.

The planning system concept is necessary because such a system manages the way data is gathered and assembled for the simulation runs: first, the current status assessment and base case simulation runs; then, the project design steps and alternative plan simulation runs. Data gathering is conducted periodically and systematically to run the model. The planning system concept is necessary because the planning system controls the way the simulation output is used: the output, together with subjective estimates, is judged against desired indicator levels for feasibility, and re-run until the best "test case" or plan is found.

To refer back to the major benefits of a simulation model and put them in the context of a total planning system:

1. achieving an understanding of the status of the system by simulation model is one element of the "base case" analysis that includes, for instance, evaluation of all existing LEAA projects;
2. diagnosing the problems of the system with the model is one element in priority decisions that includes, for instance, analysis of the current level of such criminal justice indicators as offenders with drug problems which are *not* incorporated in the model;
3. testing alternative proposals with the model is one element of a funding decision that includes the merits of the evaluation component and the availability of funds from other sources.

The use of the PHILJIM model as part of a criminal justice planning process is graphically illustrated on Chart 2.

RELATIONSHIP OF COMPREHENSIVE CRIMINAL JUSTICE PLANNING TO CRIMINAL JUSTICE INFORMATION SYSTEMS

More resources have been put into criminal justice information systems than into planning systems and simulation modelling. These information systems have tended to focus more on interjurisdictional arrangements than on the management of single state or metropolitan criminal justice systems. In addition, when present in a single jurisdiction, information systems more frequently support police, court, and correctional operations than they do planning efforts. Clearly, criminal justice information systems must support both operations and planning.

Simulation models for planning and criminal justice information systems for criminal justice have several common concerns and preoccupations:

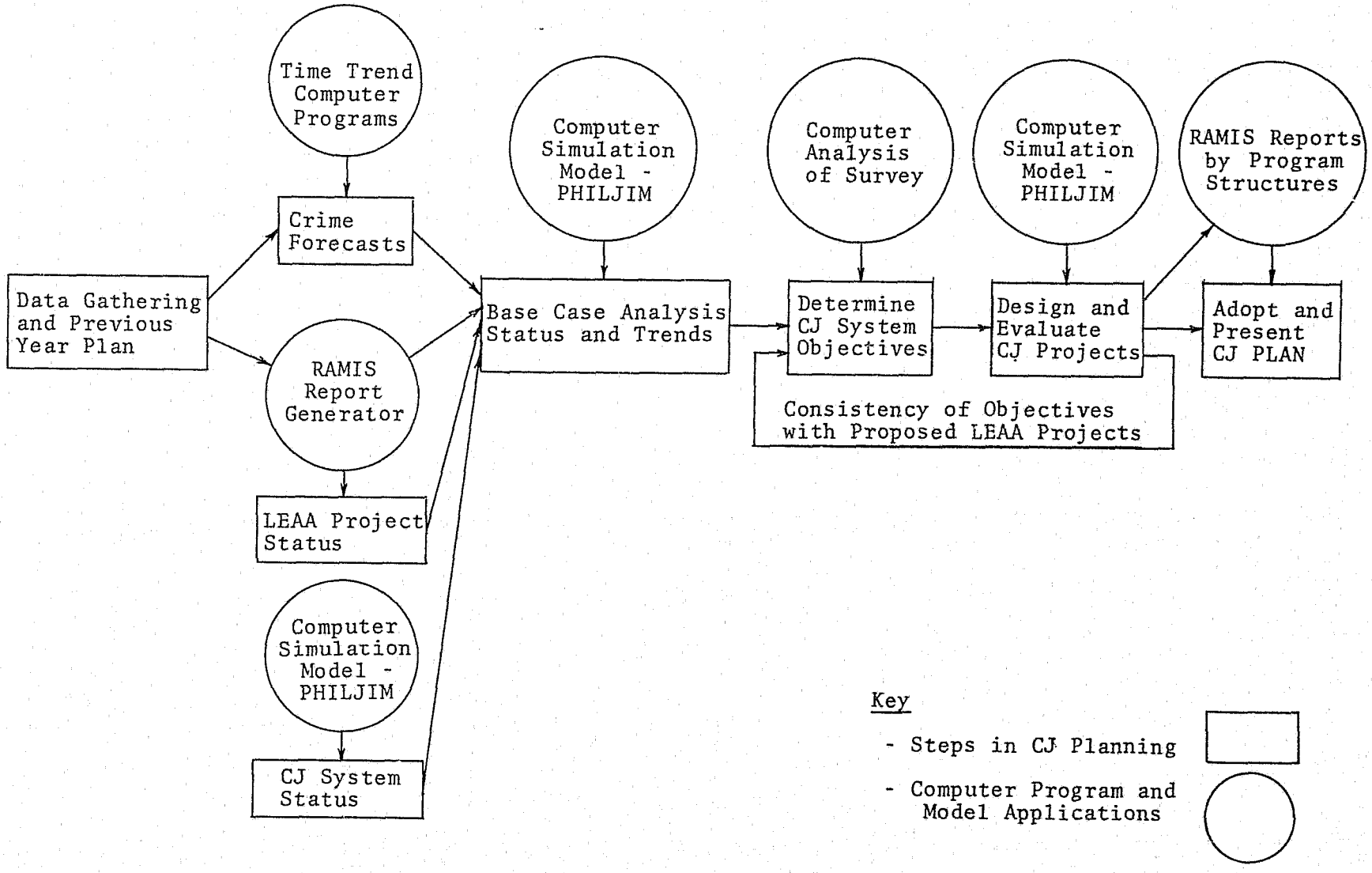
- both must proceed from a complete representation of the particular criminal justice system
- both must examine case management, defendant and offender tracking, and information interchange
- both must deal with feedback -- the planning system by incorporating recidivism data which represents one of the few overall outcome measures, the information system by providing a reverse flow of information from one subsystem (corrections to courts, courts to police) to another so that there is some longitudinal analysis of performance

In experience with Philadelphia and the State of Alaska, we have found differing patterns of development.

The planning system and the information systems for a criminal justice system may be developed in parallel, with limited coordination. Where the information system precedes the CJ planning system, two things occur: initially the planning system attempts to use the existing information system for support and later tries to expand the information base to provide data more useful to planning. A third variation is where the planning system has been installed, survived at least one annual planning cycle, and is used to guide the information file development and retrieval pro-

Chart 2

Use of Computer-Based Technology
At Key Stages in a
Comprehensive Criminal Justice Planning Process



cedures. Technical considerations are important, but frequently the agency sponsorship of the two efforts determines the level of cooperation.

Integrated development of both a planning and information system for a criminal justice system is eminently desirable. Yet to develop a simulation model, utilize indicators as the basis of criminal justice objectives, and proceed through other formal planning steps does not require a full management information system. For example, with relation to court backlog, a simulation effort requires only aggregate statistics and a programming decision; a full management information system would require data on specific cases/individuals that make up the backlog, their current status, time the case has been pending, the impediment to bringing it to trial, and other factors. As indicated above, a planning system with a full simulation model will produce far more sharply defined specifications for the management information system.

SIMULATION MODELS, CRIME SPECIFIC IMPACT PLANNING, AND CONSTITUTIONAL GUARANTEES

With the new focus of the Law Enforcement Assistance Administration on crime oriented and crime specific planning, simulation models should become an even more significant tool for criminal justice planners both within operating agencies and in separate planning units.

The PHILJIM model, both in the sample printout and in the more detailed runs with actual Philadelphia data, uses a considerable variety of crime groupings. In the detailed Philadelphia 1970 run the PHILJIM model utilized groupings of 29 Police Charge Codes and 22 Court offense codes, with a crosswalk between police and court charges worked out to permit the data from each agency's reports to be linked at the processing stages where arrests turn into court charges for further processing.

There is no practical limit in the PHILJIM program on the crime groupings that may be employed; to date, distinct groupings have been used to accommodate the different ways that police, court, corrections, and juvenile agencies report their statistics. Groupings have already been introduced to accommodate crime specific planning, such as a separation of narcotics offenses from all other charges to determine the workload for various Philadelphia drug processing and referral stages. The model thus helps to overcome a major problem in the tracking of individual offenders, which is the lack of consistency among the reporting and data elements of separate criminal justice agencies. But the use of simulation models would still be greatly enhanced by more uniformity among charge and offense reports of individual agencies.

There are several other ways in which a PHILJIM type model fosters crime oriented planning. The model enables planners to generate manpower and total costs associated with the processing of a specific crime type, such as homicides, narcotics offenses, or robberies; data of this type is seldom available, but the model generates useful analyses by crime type when it can be obtained. Projects or system changes can also be analyzed by the model in terms of the system-wide impact on specific crime types; the District Attorney screening and Alcohol/Drug referral unit built into the sample output illustrates this possibility. Another possibility is the model's option to assign personnel by crime type; thus from the available judges, a higher proportion could be assigned to victim-violent crimes to reduce the backlog of cases for the crimes of homicide, rape, robbery, and aggravated assault.

Finally, and perhaps most important, a simulation model can prevent possible excesses that might result from crime specific planning. A preoccupation with violent crimes should not be such that we lose sight of property crimes, or of narcotics offenses. The model assists positively in efforts to balance planning across crime types.

A final and vital point – the type of total effort required to make a criminal justice simulation model operational leads to a direct focus on a variety of constitutional guarantees. We are part of an era in which the Federal and State judiciaries are beginning to operationally define numerous constitutional guarantees. The Sixth Amendment right to a "speedy and public trial" is being defined in terms of a fixed number of days from arrest for major crimes, where the delay is not the fault of the defendant. The guarantees of counsel have been defined in terms of which court processing stages require counsel, and these tend to reach further back toward the arrest stages. Similarly, what constitutes an effective defense by such counsel is now pending adjudication.

Constitutional guarantees affect the effort at modelling, while the model may be used to evaluate some of the impact of crucial changes in criminal procedures. Court standards and requirements were crucial in developing the system representation or flow diagram; conversely the model can be

used to evaluate the operational – but not the legal – impact of elimination of grand jury or an earlier holding of a probable cause hearing.

Against the backdrop of the demands which will fall on state and local criminal justice systems to achieve the objectives implicit in such operational definition of basic freedoms, the best of court management techniques will be required. The type of simulation model described here has enormous possibilities for crime oriented planning and the response to standards of performance drawn from constitutional requirements.

APPENDIX A

RUNNING CHARACTERISTICS

The PHILJIM computer program is written in IBM Model 370 FORTRAN IV - G Level, and is to be run as in a batch mode. Table II lists the present core storage allocations by type of data. Under these allocations, PHILJIM requires approximately 260K bytes, including system overload. PHILJIM requires four data sets for external storage. The example run used 3.6 seconds of CPU time and 13 seconds of channel time on an IBM 370 Model 165 with a cost of $4.25, including printing costs. Typical Philadelphia runs with 28 stages, 29 crime types, and many manpower, workloads, and cost types used cost approximately $11.00 per run and Alaska runs with 36 stages and 12 crime types and only flow data cost approximately $5.60 per run.

Table II

Present Storage Allocations for PHILJIM

Data Type	*Maximum Number Presently Allowed*
Crime types	30
Crime groupings	10
Programs	20
Stages	40
Entering flows	20
Beginning backlogs	20
Key Manpower types	40
Other Manpower types	150
Workloads	40
Average Populations	20
Non-salary Variable Costs	40
Non-salary Fixed Costs	40
Assignment Rules	40
Branches	125
Projects in an Alternative Plan	100

(Number of Projects limited only by external storage)

END