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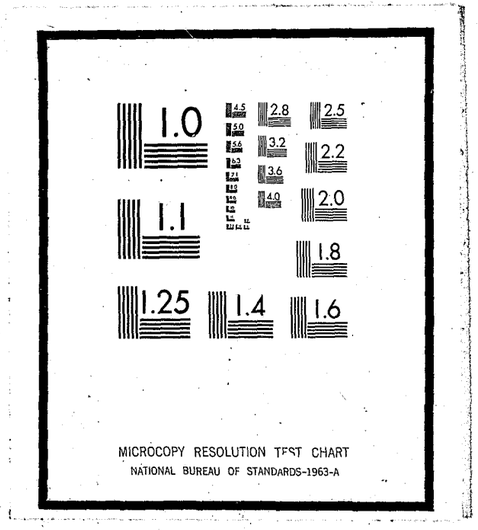

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U.S. DEPARTMENT OF JUSTICE
LAW ENFORCEMENT ASSISTANCE ADMINISTRATION
NATIONAL CRIMINAL JUSTICE REFERENCE SERVICE
WASHINGTON, D.C. 20531

Date filmed 8/13/75

STATISTICS DIVISION
Report #2/73

MINISTRY OF THE SOLICITOR GENERAL

and

MINISTRY OF STATE FOR URBAN AFFAIRS

October 1, 1974

CANJUS Project Copy #2

CANJUS Project -

A PRELIMINARY DESCRIPTION OF THE CANADIAN CRIMINAL JUSTICE SYSTEM

Volume I

by
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The views expressed are those of the authors and do not necessarily represent those of the Ministry of State for Urban Affairs or the Ministry of the Solicitor General.

ACKNOWLEDGEMENT

This report would not have been possible without the full co-operation of the Judicial Division of Statistics Canada. In particular, Ms Francine Bertrand, Ms Jane Angus, Ms Sharon Card and Mr. Marvin Ross and their staff were most helpful in explaining tables and obtaining extra information when necessary. Responsibility for the manuscript, including any errors or ommissions must, however, remain with the authors.

ABSTRACT

Although at present in Canada a great amount of quantitative information is collected on the criminal justice system, the information is fragmented in different physical locations and in many cases is incompatible and incomplete. This document uses a simple model of the criminal justice system, JUSSIM, developed by A. Blumstein and J. Belkim to organize part of the present data on the Canadian Criminal Justice System and present it in a compatible form. The description which we give of the system is by no means complete; however, it is a first step in obtaining more compatible, complete, and reliable information on flows of persons and the application of costs and workloads in the Canadian Criminal Justice System.

I INTRODUCTION

During the last decade there has been an increasing public concern with the problems of providing criminal justice in Canada. This public concern and interest has focused attention on the need for reforms in the administration of the criminal justice system. However, before administrative changes can be made in the criminal justice system, we must have a more adequate knowledge of the present operation of that same system. As such, this knowledge would allow criminal justice administrators to quantitatively test changes in the system and to explore the system-wide consequences of any sub-system change. Hopefully, we would come to view operation of the criminal justice system as an integrating, inter-acting activity rather than as the operation of the separate autonomous police, courts and corrections agencies. It is therefore a necessary prerequisite to develop a plan for improving the criminal justice system by providing an adequate quantitative description of the system.

There have been at least two models of which the authors are aware which have been developed for the criminal justice system in Canada (apart from the detailed

modelling by R. Hann of the court subsystem. One of these is a general systems flow model developed by the Solicitor General's office in the federal government. This model describes flows within the adult justice system and the juvenile system as well as parole and probation. The flows are aggregated for all crime types, a different approach from that presented here or in the Blumstein et al Markov Model (see reference (1)). Another model has been prepared for the Province of Saskatchewan and presents fairly detailed data where it is available on flows within the justice system in that province.

The model which we describe is not a totally new development either in terms of modelling or in its application to the Canadian criminal justice system. It is intended rather as a beginning step in supplying a systems description of the justice system at federal and provincial levels as well as possibly metropolitan levels [1/] where it is hypothesized a large proportion of the problems in the delivery of justice occurs at the present time. The basic justice system we will describe in more detail is

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1/ One problem encountered at this level of aggregation is that the court system is in the province's jurisdiction and thus judicial districts must be used.

shown in Figure 1. The actual work which has been done thus far is in describing the system aggregated over all provinces (excluding Quebec and Alberta).

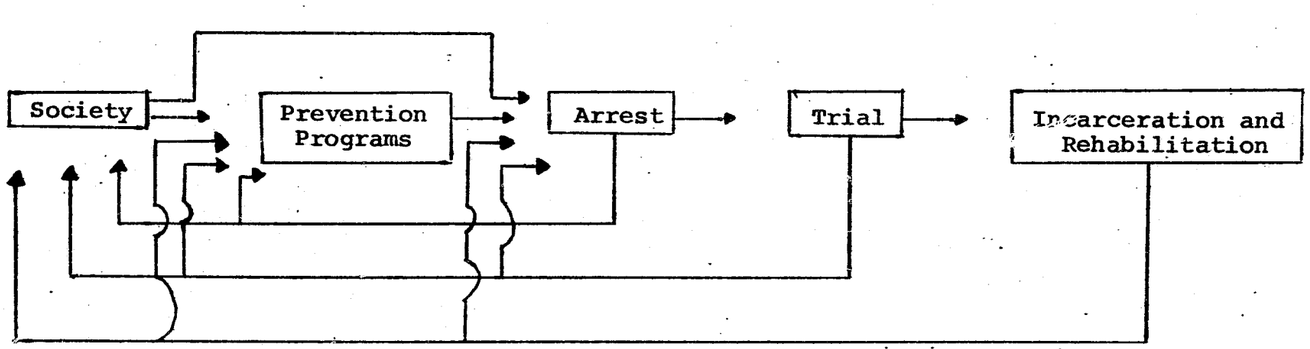
However, it is intended that this analysis can be carried forward to the other levels, particularly the provincial level, and by so doing allow a good description of the present delivery of criminal justice in Canada, both federally and provincially.

The model is not intended as a detailed social and economic research project on the criminal justice system such as that described by Hann in reference (8). Instead, we have provided a basic planning model which will begin to describe the information needed to help administrators make more informed planning decision. The model then presents a description of flows of persons, costs and workloads in the Canadian Criminal Justice System. It allows the administrators or planners to change various parts of the system and observe the impact of these changes on resources throughout the whole system.

In describing the justice system there are several points which should be made about the data which were used to formulate the initial model. Although the Statistics Canada reports provide quite comprehensive data,

FIGURE 1

BASIC CRIMINAL JUSTICE SYSTEM



there are many problems involved in obtaining compatible data for a description of the system at a national level. The reports which were used to generate this model were the Statistics Canada judicial reports of 1970 plus some specially generated tables from Statistics Canada raw data. The reports which were used to generate the systems description clearly were not specifically oriented towards this type of analysis. For this reason, it was necessary to make several assumptions in order to obtain a quantitative description of the criminal justice system. The specific problems encountered in the present set of statistical reports published by Statistics Canada are described in detail in reference (5).

With this in mind, this report begins to quantitatively describe the Canadian Criminal Justice System (C.C.J.S.). The reader must realize that this information system description is only one way of describing the administration of justice in Canada. The intention, in formulating this model, is to furnish on a regular basis, a quantitative description of the C.C.J.S.

Our quantitative description provides a stage by stage movement of individuals into and through the C.C.J.S. As can be seen from Figure 1, individuals move

from society into the system via the arrest process. The individuals then flow between the Police, Court, Corrections and Juvenile subsystems in the C.C.J.S. At any stage in the criminal justice process an individual may exit out of the system, returning to society. As such, at any process in providing criminal justice, our description provides an accountability of the number of individuals at each specific stage and the number who exit out of the system at a particular process

Besides providing the number of individuals or the "units of work" at each stage, the description also includes calculated costs and workloads that are applied to the appropriate stages. The calculated costs are the average costs per unit of time for each resource. These costs are generally derived from the aggregate expenditures for each subsystem. A workload or a "unit workload" is the amount of resource processing time consumed at each stage by a unit of flow for each crime type.

With this brief introduction to the description which we have developed, we present a more detailed description of the data used and the modelling methodology in Section II. In Section III we give an in-depth description of the system's description and its limitations. This is followed by a brief section on present efforts being expended on the modelling effort.

II BASIC DATA AND THE MODELLING METHODOLOGY

From the brief introduction we see that for each "stage" in our "system" description we have three types of information:

(1) the number of individuals at each specific stage,

(2) the resource workloads or amount of processing time, and,

(3) the resource cost per unit of time.

Let us now take a closer look at the stage processes for each subsystem:

(1) The arrest and report processing stages in the Police subsystem. The resources with the costs and workloads that are applied to these stages are Detectives and Patrolmen.

(2) The Court subsystem is divided into the indictable conviction court and the summary conviction court. In the indictable conviction court

there are four types of trials and a separate stage for each type. These types of trials include: Judge and Jury, Judge without Jury, Magistrate with consent and Magistrate absolute. In the summary conviction court there is only one type of trial. The resources, with the costs and workloads that are applied to the Court subsystem, include: Magistrate, Judge, District Attorney, Prosecutor and District Attorney, Indictment.

(3) The Corrections subsystem involves the incarceration stages plus parole and probation. The resources, with the associated costs and workloads that are applied, include: Institution, Jail, Probation and Parole.

(4) The Juvenile subsystem involves both court proceedings and instituion. As such, the applied resources with the costs and workloads are Juvenile Judge, Juvenile Prosecutor, Juvenile Probation and Juvenial Institution.

In sum, we apply three basic sets of data to the various stages within each of the four subsystems that comprise the Canadian Criminal Justice System. The first set of data is the "units of work" in the C.C.J.S. for 1970. The units of work for the criminal justice system include the number of reported offences, number of arrestees, number of defendants, number of cases and the number of convictees [2/]. The second set of data is the costs which are incurred by each resource to process the units of work. The third set of data is the resources of manpower or workloads that are applied to the various stages within the system. Some of the cost, resource and workload data that we are utilizing was gathered in the Allegheny County study on the criminal justice system (see Tables 1 and 2) [3/].

A total picture is then developed with stage by stage data including:

2/ However, in our description we have used the number of persons as the unit of work. Thus, the description is consistent making the stage processes comparable.

3/ This study is described in references (6) and (7).

TABLE 1 - RESOURCES*

Resource Number	Name	Unit of Time	Cost
1	Detective	Hour	$ 7.79
2	Patrolman	Hour	7.18
3	Magistrate	Hour	35.93
4	Judge	Day	860.00
5	District Attorney: Prosecutor	Day	100.00
6	District Attorney: Indictment	Hour	13.11
7	Probation	Year	69.00
8	Parole	Year	480.00
9	Institution	Year	4,438.00
10	Jail	Day	7.00
11	Juvenile Judge	Day	480.00
12	Juvenile Prosecutor	Day	76.37
13	Juvenile Probation	Year	231.88
14	Juvenile Institution	Year	9,621.40

* This cost data was gathered in a study for Allegheny County. For a complete description of these resources and related costs, see reference: J. Belkin, A. Blumstein, and W. Gloss, "An Interactive Computer Program for Analysis of Criminal Justice Systems", Carnegie-Mellon University, Pennsylvania, July, 1971.

TABLE 2 - WORKLOADS*

Workload Number	Name	Unit of Time	Associated Resource
1	Detective: Report	Hour	(1) Detective
2	Patrol: Report	Hour	(2) Patrolman
3	Detective: Arrest	Hour	(1) Detective
4	Patrol: Arest	Hour	(2) Patrolman
5	Magistrate: Summary Hearing	Hour	(3) Magistrate
6	Magistrate: Arraignment	Hour	(3) Magistrate
7	Judge: Bench Trial	Day	(4) Judge
8	District Attorney: Bench Trial	Day	(5) District Attorney: Prosecutor
9	District Attorney: Indictment Preparation	Hour	(6) District Attorney: Indictment
10	Jail: Summary Offence	Day	(10) Jail
11	Probation	Year	(7) Probation
12	Parole	Year	(8) Parole
13	Institution	Year	(9) Institution
14	Juvenile Judge	Day	(11) Juvenile Judge
15	Juvenile Prosecutor	Day	(12) Juvenile Prosecutor

Workload Number	Name	Unit of Time	Associated Resource
16	Juvenile Probation	Year	(13) Juvenile Probation
17	Juvenile Institution	Year	(14) Juvenile Institution
18	District Attorney: Jury Trial	Day	(6) District Attorney: Indictment
19	Judge: Jury Trial	Day	(4) Judge

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* For the average workload per crime by crime types see Appendix A.

(1) "units of work" or the "horizontal inputs" into the system (eg., number arrested by crime type);

(2) the allocation of resources to specific stages in the system and the capacity constraints, if any;

(3) "unit workload" or amount of processing time at each stage by unit of flow for each crime type;

(4) cost per unit of time and the annual availability of each resource.

Since the above sets of input data are the crux of the C.C.J.S. description, it is necessary to expand the function(s) of each input in the system [4/].

4/ It should be noted that when inputs are discussed in the description we are describing two types of inputs. The units of work, or the number of individuals, (as we have used) can be described as "horizontal inputs" while unit workloads, costs, resources and annual time availabilities per year are termed "vertical inputs". That is, the number of individuals in the system create the work for the system. The resources applied are a separate input providing "justice". Therefore, for clarity purposes, the units of work are the horizontal inputs and the allocation of resources to process these units of work are the vertical inputs.

In our present model the units of work are the number of individuals at a specified stage in the system [5/]. In stage 1 in Figure 2, there were 807,688 offences reported (in terms of number of individuals [6/]) in 1970. Viewing stage 2 in the diagram we can see that only a portion of the offences reported result in charges. Similarly, as we move through the system it can be seen that the units of work, or in our model the numbers of individuals, decrease numerically. (This is, of course, due to the proceedings within the system.) For example, using our 1970 units of work data, it has been calculated that of the 807,688 offences reported only 12.8% resulted in convictions.

5/ The units of work could also be the number of cases or the number of offences. We used the number of individuals because at the present time, the statistical reporting system of Statistics Canada best suits this type of information system description.

6/ Using the different terms "individuals" and "offences" somewhat loosely may be confusing to the reader at this present point. However, we converted the number of offences into the number of individuals when it was necessary. This conversion is later described in Section III, 1.2.

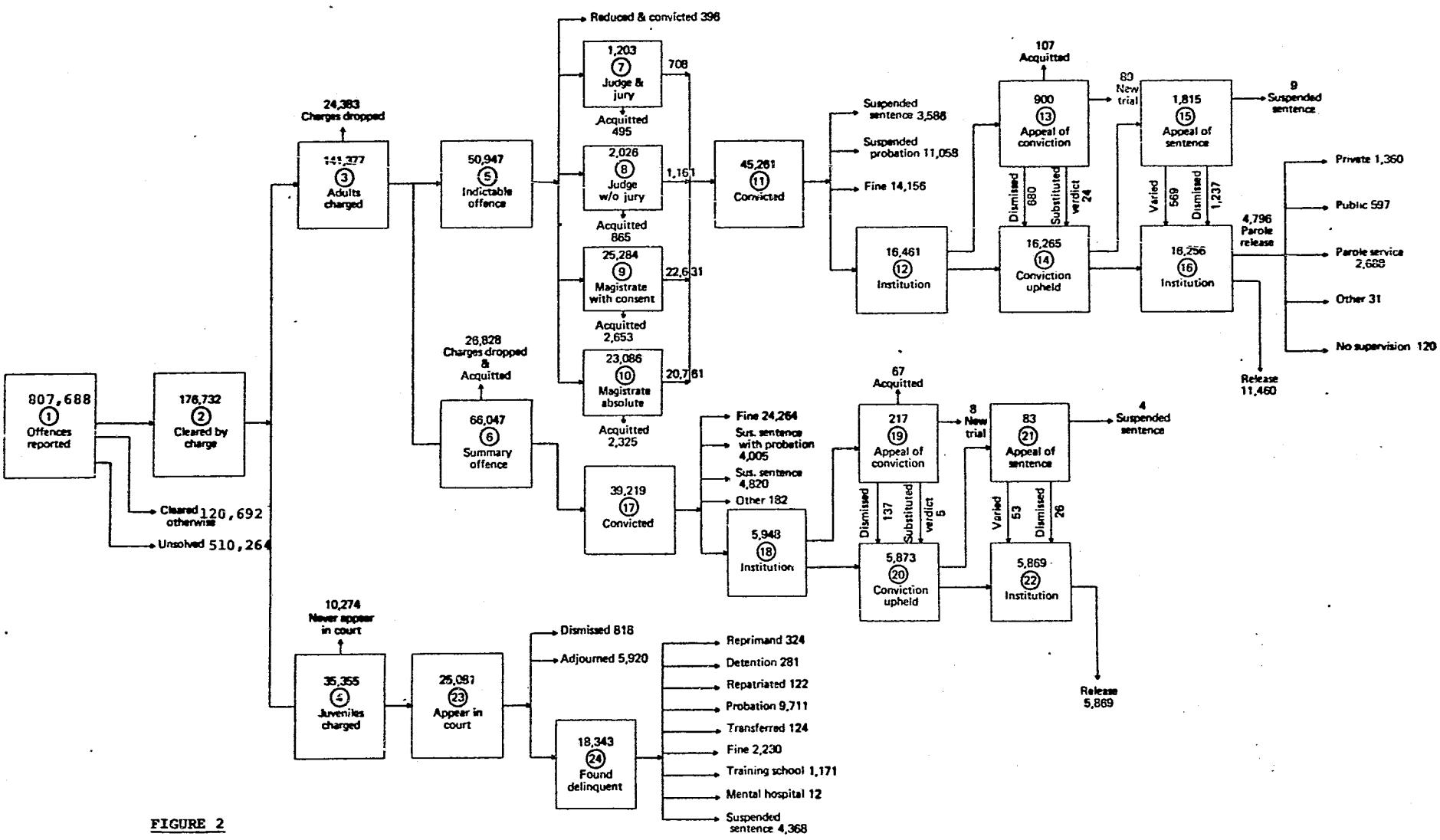

FIGURE 2

Criminal offences in Canada - 1970

Now that the horizontal inputs into the system have been established, it is not difficult to see the allocation of resources in the system. (Refer back to Table 1 to review the resources that are used for our model.) As such, patrolmen and detectives are responsible for the inputs in terms of the stages of offences reported and number of charges. Judges, District Attorneys (Indictment and Prosecutor), Juvenile Judges and Juvenile Prosecutors are the resources applied to the persons who appear in court. The Institution, Jail and Juvenile Institution resources are applied to the incarcerated individuals. The individuals on probation require resources and consequently the resources of Probation and Juvenile Probation are applied to these individuals. Finally, the system requires the Parole resource to be allocated to supervise parolees.

Given this allocation of resources to the flows or units of work in the system, there are constraints within which these resources can operate. The first constraint is called a <u>capacity constraint</u>. That is, there are only so many resources available to the system. The second constraint is the annual time availability of each resource. For example, a patrolman works approximately 40 hours a week so his annual time availability is about 212 days per year.

Now that we have illustrated the units of work and the resources allocations with the related constraints, we must know the unit workload or the amount of resource processing time consumed by a unit of work for a given crime type. For example, it takes 43.5 hours for a detective to process (i.e., arrest and report) each murder that occurs. This type of information is needed for each resource workload by each crime type [7/]. (To view how the workloads and associated resources are allocated in our model see Figure 3.)

The last set of data that we require to input into the system is the cost per unit of time. In this instance we calculate the cost for each resource. For example, the cost per hour for a patrolman and a detective are $7.18 and $7.79, respectively. However, these costs are not necessarily indicative of the hourly wages of these resources. In calculating this cost data administrative, operation and maintenance, capital and salary costs have been taken into consideration. As such, the cost per hour for the patrolmen and detectives was calculated by distri-

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7/ For a complete description of the workload information (by crime type) that we utilized see Appendix A.

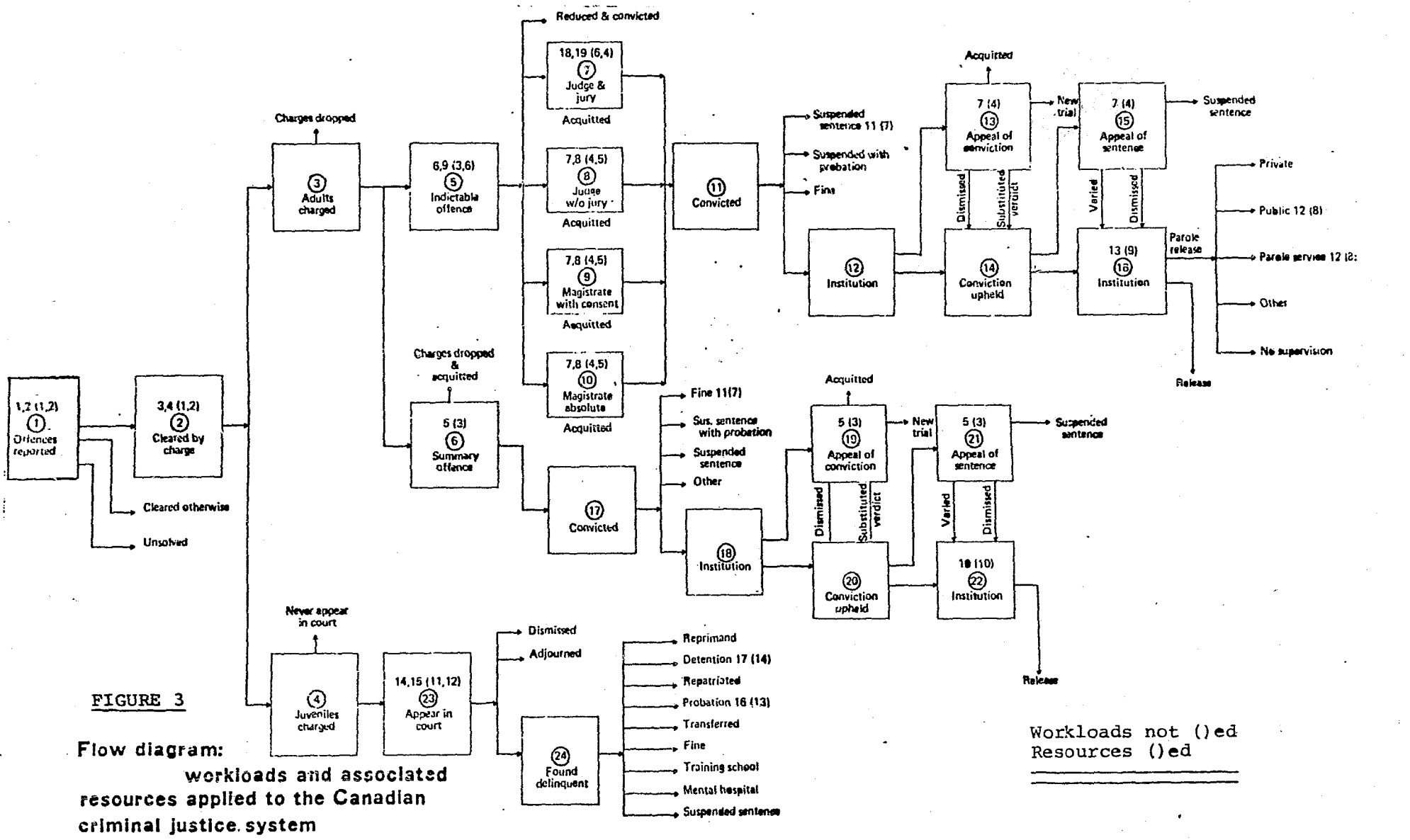

FIGURE 3

Flow diagram: workloads and associated resources applied to the Canadian criminal justice system

Workloads not ()ed
Resources ()ed

buting annual expenditure for the Police Subsystem over the number of detectives and patrolmen in the operation [8/].

Once we have aggregated this information, a readable data file is properly compiled and fed into JUSSIM [9/]. Probably the best description of the JUSSIM model and its capabilities has been made by the originator himself in reference (1).

The first priority in creating data-sets for input to JUSSIM is to find the number of crime types which we have in our criminal justice system. Presently, there are 17 crime types in the C.C.J. systems description [10/]. Then, we put into the data file the branching ratios which depict the portion of flows (for each crime type) from each stage to each of the possible subsequent stages. Once we have put in the branching ratios for 17 crime types for all 24 stages, it is necessary to input a list of the resources including the cost of each resource per unit of time, annual

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8/ Refer back to Table 1 to see the assumed cost data that we used.

9/ For our readable data file on the C.C.J.S. see Appendix B.

10/ This is presently being extended to include other crime types including criminal code traffic offences and narcotics offences under the Food and Drug Act.

time availabilities per resources and the capacity constraint per resource. The next step is to put in the workload information for the 17 crime types. Finally, we designate our first stage as a reference stage with the absolute flows or units of work for that stage (crime rate in each crime type). Using the absolute flows from the reference stage and the branching ratios that we have specified, the program will compute the absolute flows for each stage in the system [11/].

Because JUSSIM is an interactive program, it allows the user to change some of the parameters of the above system's description and then to examine the impact of these changes on total cost, workloads, manpower requirements and flows within the system. Generally speaking, the user sitting at the computer terminal will be asked a number of questions by JUSSIM, each of which is a separate phase of the program. In each of these phases the user can make changes to the data base. It is important that the user specify any changes in other parameters of the model. For example, if the police have a higher resource commitment to investigation of sex offences, the user might expect

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11/ The readable data file for the C.C.J.S. is illustrated in Appendix B.

the conviction rate of the courts to increase [12/] because of better information on the offender and the offence which might be available. Therefore, he would change the branching ratios for convictions according to the calculated or predicted change. Then, the model will compute the system-wide changes in costs, workloads, resource requirements and flows through various parts of the system. All output changes are recorded as a test case. Output tables compare the test case to the base case.

Using JUSSIM there are a number of parameters that can be changed allowing administrators to view the system-wide impact. These parameters include: level of system flows, unit costs, annual time availabilities, capacity constraints, and units workloads. By changing only two of these parameters, given a hypothetical example, it is possible to see the kind of results that are produced by the model. For example, if salaries of employees in the C.C.J.S. are increasing, and crime rates for specific

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12/ It is useful to differentiate (1) - first level changes which the model may predict using present parameters and (2) - second level changes (such as the increased court conviction rate) which the user must hypothesize would happen and change in order to allow the model to output "realistic" first level changes.

offences are rising, JUSSIM can predict the cost, workload and manpower impact on the entire system.

The results that are predicted by JUSSIM can be reproduced in three different types of output tables. One output table presents the results using the concept of a "subsystem". This output table summarizes the results, by the subsystem (i.e., Police, Courts, Corrections and/or Total) which the user specifies. JUSSIM will reproduce a second output table which is called a workload table. This table gives results for a specified, single workload. The third table that the model will reproduce is called a flow table. This table gives the input and output flows of any one stage. In each type of table, the total results across all crime groups are always given. Returning to the hypothetical example of salary increases and rising crime rates, we can see the kinds of results that are produced by JUSSIM for each type of table. Examples of these output results and types of tables are shown in Tables 3, 4 and 5.

SUMMARY OF RESULTS FOR POLICE

		BASE	TEST	CHANGE	O/O CHANGE
COSTS IN THOUSANDS					
Patrolman		$ 3,195.6	$ 3,358.9	$ 163.3	5.1
Detective		18,979.4	19,513.3	533.9	2.8
TOTAL		22,175.0	22,872.2	697.2	3.1
WORKLOADS					
Patrolman	Hour	445,072.9	447,856.6	2,783.7	0.6
Detective	Hour	2,436,382.2	2,439,158.4	2,776.2	0.1
RESOURCE REQUIREMENTS					
Patrolman		261.8	263.4	1.6	0.6
Detective		1,433.2	1,434.8	1.6	0.1
FLOWS					
Patrolman		982,939.1	990,724.5	7,785.4	0.8
Detective		982,939.1	990,724.5	7,785.4	0.8

SUMMARY OF RESULTS FOR COURT

		BASE	TEST	CHANGE	O/O CHANGE
COSTS IN THOUSANDS					
Judge		$ 3,105.8	$ 3,123.2	$ 17.5	0.6
Magistrate		335.9	338.9	3.0	0.9
Prosecutor		6,705.6	6,739.8	34.2	0.5
TOTAL		10,147.2	10,202.0	54.7	0.5
WORKLOADS					
Judge	Day	4,923.2	4,948.6	25.3	0.5
Magistrate	Hour	9,348.3	9,433.1	84.9	0.9
Prosecutor	Day	131,722.2	132,390.0	667.8	0.5
RESOURCE REQUIREMENTS					
Judge		23.3	23.5	0.1	0.5
Magistrate		17.2	17.4	0.2	0.9
Prosecutor		541.5	543.9	2.5	0.5
FLOWS					
Judge		27,567.9	27,690.5	122.6	0.4
Magistrate		50,760.7	51,323.4	562.6	1.1
Prosecutor		48,446.3	49,001.8	555.5	1.1

SUMMARY OF RESULTS FOR CORRECTIONS

		BASE	TEST	CHANGE	O/O CHANGE
COSTS IN THOUSANDS					
Detention		$ 54,469.1	$ 56,694.7	$ 2,225.6	4.1
Parole		1,190.0	1,196.0	5.9	0.5
Probation		2,028.9	2,041.0	12.1	0.6
TOTAL		57,688.0	59,931.7	2,243.6	3.9
WORKLOADS					
Detention	Year	78,191.7	79,091.0	899.3	1.2
Parole	Year	2,479.3	2,491.6	12.3	0.5
Probation	Year	13,622.2	13,742.5	120.2	0.9
RESOURCE REQUIREMENTS					
Detention		12,198.6	12,268.7	70.1	0.6
Parole		70.8	71.2	0.4	0.5
Probation		389.2	392.6P	3.4	0.9
FLOWS					
Detention		16,270.6	16,408.5	137.9	0.8
Parole		2,591.8	2,608.8	17.0	0.7
Probation		13,654.5	13,763.1	108.6	0.8

TABLE 4 - WORKLOAD OUTPUT

RESULTS FOR PATROL RPT.

	BASE	TEST	CHANGE	O/O CHANGE
Costs in Thousands	$ 2,496.8	$ 2,603.6	$ 111.8	4.5
Workload in Hour	347,746.8	347,812.4	65.6	0.0
Resource Requirements	204.6	204.6	0.0	0.0
Flows	807,688.0	813,483.5	5,795.5	0.7

RESULTS FOR PATROL ARR.

Costs in Thousands	698.8	750.3	51.5	7.4
Workload in Hour	97,326.1	100,044.2	2,718.2	2.8
Resource Requirements	57.3	58.8	1.6	2.8
Flows	175,251.1	177,241.0	1,989.9	1.1

RESULTS FOR MAG ARRAIGN

Costs in Thousands	335.3	338.4	3.0	0.9
Workload in Hour	9,332.7	9,417.4	84.7	0.9
Resource Requirements	17.2	17.4	0.2	0.9
Flows	50,659.1	51,220.5	561.4	1.1

RESULTS FOR PROBATION

Costs in Thousands	478.6	485.3	6.7	1.4
Workload in Year	6,936.5	7,033.2	96.7	1.4
Resource Requirements	198.2	200.9	2.8	1.4
Flows	4,103.5	4,178.5	75.0	1.8

RESULTS FOR PAROLE

	BASE	TEST	CHANGE	O/O CHANGE
Costs in Thousands	$ 1,190.0	$ 1,196.0	$ 5.9	0.5
Workload in Year	2,479.3	2,491.6	12.3	0.5
Resource Requirements	70.8	71.2	0.4	0.5
Flows	2,591.8	2,608.8	17.0	0.7

RESULTS FOR INSTITUTION

Costs in Thousands	52,191.3	54,398.1	2,206.7	4.2
Workload in Year	11,760.1	11,825.7	65.6	0.6
Resource Requirements	11,760.1	11,825.7	65.6	0.6
Flows	16,019.2	16,155.3	136.1	0.8

TABLE 5 - FLOW OUTPUT

FLOWS THRU STAGE 1 - REPORTED

	BASE	TEST	CHANGE	O/O CHANGE
TOTAL INPUT	307,688.0	813,483.5	5,795.5	0.7
OUTPUTS				
Charge	175,251.1	177,241.0	1,989.9	1.1
Otherwise	122,527.7	125,117.5	2,589.7	2.1
Unsolved	509,909.2	511,125.0	1,215.8	0.2

FLOWS THRU STAGE 2 - CHARGED

TOTAL INPUT	175,251.1	177,241.0	1,989.9	1.1
OUTPUTS				
A. Charge	140,427.1	142,310.3	1,883.3	1.3
J. Charge	34,824.0	34,930.6	106.6	0.3

FLOWS THRU STAGE 5 - INDICT. OFF

TOTAL INPUT	50,659.1	51,220.5	561.4	1.1
OUTPUTS				
Reduced	412.4	413.2	0.8	0.2
J. and J.	1,042.8	1,055.0	12.1	1.2
J. Without J.	1,894.2	1,908.3	14.1	0.7
Mag. Con.	24,660.8	24,746.1	85.3	0.3
Mag. Ab.	22,648.9	23,097.9	449.0	2.0

FLOWS THRU STAGE 16 - INSTITUTE

	BASE	TEST	CHANGE	O/O CHANGE
TOTAL INPUT	16,019.2	16,155.3	136.1	0.8
OUTPUTS				
Prpriv.	1,311.3	1,319.5	8.2	0.6
Prpub.	573.9	579.2	5.3	0.9
Prparserv.	2,591.8	2,608.8	17.0	0.7
Prother	28.5	28.8	0.3	1.0
Prnosuper.	112.2	113.1	0.9	0.8
Ind. Release	11,401.6	11,505.8	104.3	0.9

TABLE 3 - SUB-SYSTEMS OUTPUT

SUMMARY OF RESULTS FOR TOTAL SYSTEM

		BASE	TEST	CHANGE	O/O CHANGE
COSTS IN THOUSANDS					
Police		$22,175.0	$22,872.2	$ 697.2	3.1
Court		10,147.2	10,202.0	54.7	0.5
Corrections		57,688.0	59,931.7	2,243.6	3.9
TOTAL		90,010.3	93,005.8	2,995.5	3.3
WORKLOADS					
Police	Hour	2,881,455.1	2,887,015.1	5,560.0	0.2
Court	Day	145,993.7	146,771.7	778.0	0.5
Corrections	Year	94,293.1	95,325.0	1,031.9	1.1
RESOURCE REQUIREMENTS					
Police		1,695.0	1,698.2	3.8	0.2
Court		582.0	584.8	2.8	0.5
Corrections		12,658.7	12,732.5	73.8	0.5
FLOWS					
Police		1,965,878.2	1,981,449.0	15,570.8	0.8
Court		76,014.2	76,692.3	678.1	0.9
Corrections		32,516.9	32,780.5	263.5	0.8

By varying the system parameters C.C.J.S. administrators can begin to predict the quantitative impact of changes made with the criminal justice system not just within their own subsystem (eg., police, court and corrections), but also on the system as a whole.

Now that we have broadly outlined a description of the criminal justice system and JUSSIM, the modelling methodology we use, it is possible to detail some of the basic assumptions that were made in compiling comparable data for this flow diagram. First of all, it must be stated that the flows in the model are static or steady state. That is, the data on the number of inputs pertain to 1970 [13/]. Therefore, it is evident that the number of persons who were arrested for rape in 1970 does not necessarily correspond to the number of rape convictions for 1970 [14/]. Similarly, this static (or steady state) model produces other incompatibilities in the data collection for the flow diagram. We noted that in some

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13/ Conclusive data for 1971 will not be available until December, 1973 from Statistics Canada Reports.

14/ This would only be true if the system were in steady state, that is, each year there are the same number of arrests, convictions, etc.

crime types there were more trials than the actual number of persons charged for that particular crime. For example, in 1970 there were 5,396 persons tried on an indictable assault charge, while there were only 5,366 persons charged on this indictable offence. This could be due to the fact that there were a number of assault charges in 1969 that did not come to trial until 1970 [15/].

Secondly, we have made the assumption, or rather the presumption, that the data presented in the flow diagram is national. Unfortunately, court data for the provinces of Alberta and Quebec is not comparable with the data that the Judicial Division of Statistics Canada has collected for the other eight provinces in Canada [16/].

15/ This problem of incompatibility in the data in the court subsystem will be expanded and clarified when we describe the particular stages involved in the system.

16/ We could have used moving averages based on 1967 statistics. That is, Statistics Canada has gathered 1967 statistics for these two provinces that are comparable with our present data base and thus, we are able to average these statistics taking into consideration the time discrepancy. However, it is our belief that the data produced would be significantly distorted. After further analysis, we may develop comparable data for Quebec and Alberta.

A third assumption is that there are seventeen crime types. (The crime types that are used for the C.C.J.S. are presented in Table 6. Table 7 presents a cross national comparison of the crime types with the Allegheny County Criminal Justice System.) Our separation of crime types was used because it was the lowest common denominator in terms of crime type classification used by the subsystems. The seventeen crime types basically follow the classification of offences into crime types that was produced by the Police subsystem. From that point we re-grouped the classification of offences in the Court, Juvenile and Corrections statistics into these crime types [17/]. There are also other aggregation-data incompatibilities involved in viewing criminal justice in Canada as a system rather than autonomous Police, Courts, Corrections and Juvenile Systems.

17/ In many instances this reclassification became quite difficult. In essence, there were a number of areas in which the collection of data between subsystems was virtually incompatible. For these problems see reference: R.G. Cassidy, R. George Hopkinson and William Laycock, "Information Systems Report on the Canadian Criminal Justice System: Problems and Recommendations", (Ministry of State for Urban Affairs, Canada, June, 1973).

TABLE 6 - C.C.J.S. CRIME TYPES

The crime types presently used for the Canadian C.J.S. Model

1. Murder
2. Attempted Murder
3. Manslaughter
4. Rape
5. Other sexual Offences
6. Wounding
7. Assaults (not indecent)
8. Robbery
9. Breaking and Entering
10. Theft of Motor Vehicle
11. Theft
12. Have Stolen Goods
13. Frauds
14. Prostitution
15. Gaming and Betting
16. Offensive Weapons
17. Other Criminal Offences

TABLE 7 - CROSS-NATIONAL COMPARISON OF CRIME TYPES

The first column lists the crime types in the Allegheny County study. The second column lists the present Canadian C.J.S. crime types. As such, we can make a cross-national comparison.

1.	Murder	1.	Murder
2.	Negligent Manslaughter	2.	Attempted Murder
3.	Forcible Rape	3.	Manslaughter
4.	Robbery	4.	Rape
5.	Aggravated Assault	5.	Other Sexual Offences
6.	Burglary	6.	Wounding
7.	Larceny	7.	Assaults (not indecent)
8.	Auto Theft	8.	Robbery
9.	Simple Assault	9.	Breaking and Entering
10.	Forgery, Fraud, Embezzlement	10.	Theft of Motor Vehicle
11.	Stolen Property	11.	Theft
12.	Vandalism	12.	Have Stolen Goods
13.	Weapons	13.	Frauds
14.	Commercial Vice	14.	Prostitution
15.	Sex Offences	15.	Gaming and Betting
16.	Narcotics	16.	Offensive Weapons
17.	Gambling	17.	Other Criminal Offences
18.	Family Offences		
19.	Drunk Driving		
20.	Liquor		
21.	Drunkenness		
22.	Disorderly Conduct		
23.	Traffic		
24.	Other Non-Traffic		
25.	Runaway		
26.	Truancy		
27.	Ungovernable		
28.	Surety of the Peace		

In addition, for a complete description of the C.C.J.S. there is still some information lacking that needs to be gathered and integrated into the appropriate statistics reports [18/].

A final basic assumption is that this quantitative description of the Canadian C.J.S. has ommited the statistics on the Federal Statutes, the Narcotics Act, the Provincial Statutes, Municipal By-laws, Arson, Criminal Negligence in operating a Motor Vehicle and Criminal Motor Vehicle Offences. This data is now being included, creating five additional crime types, in a more detailed description of the Canadian C.J.S.

Now that the criminal justice information systems model has been introduced, we will briefly review the content of the remainder of this report. In the next section of this report we begin with a more detailed description of the total C.C.J.S. (i.e., a federal system for eight of the provinces excluding Alberta and Quebec)

18/ The reader should realize that many of these incompatibilities relate only to our system's description and not to the many other needs of criminal justice statistics. See (5) for a report of the data incompatibilities between subsystems of the C.C.J.S.

and then expand this into a subsystem description (i.e., Police, Courts, Corrections, and Juveniles) but at the same time keeping the overall organization of information presented earlier in this section. In presenting this description, the subsystems are once again broken down into a stage by stage description.

Data for this stage by stage description was obtained from Statistics Canada Reports (see references (9) to (17)). Included in this stage by stage description are the stage assumptions, if any, and the assumed work-loads and the associated resources that we have applied to each specific stage. In the last section of the paper, there is a summary of how we are up-dating the material covered in this report with the present effort.

III A DESCRIPTION OF THE STAGES IN THE CANADIAN CRIMINAL JUSTICE SYSTEM MODEL

In this section of the paper we develop a stage by stage description of the C.C.J.S. model. Included in this description are the stage assumptions (where necessary) that were made in order to compile compatible data for the entire system.

In this section we have also stated the workloads and the resources that are associated with a particular stage. In some instances workloads and resources are applied to flows that exit out of the system. This is necessary because of the characteristics of the "exit flow". For example, an individual exits out of the system after he pays a fine as a penalty for being convicted of an offence. As such, workloads and associated resources are not applied to the exit flow path that is a fine. On the other hand, exit flows such as "suspended sentence with probation" require resources to be applied during the course of the processing period.

A. Police Subsystem:

The horizontal inputs or units of work data for the Police sections were obtained from the annual report of "Crime Statistics" (see reference (12)) of the Judicial Division for Statistics Canada. That report contained data on the number of offences reported, the number of offences cleared by charge, the number of offences cleared otherwise (for example, offences that were reported but after some investigation turned out to be a "false alarm"), the number of cases unsolved, the number of juveniles charged and the number of adults charged. Thus, the first four stages in the flow diagram use police statistics to describe the flows of individuals.

Stage 1 - Offences Reported

1.1 Description:

This stage serves as a starting point for the model. Simply, in this stage there has been a crime committed and it has been reported to the police or the police have discovered the crime. These offences that have

been reported can flow directly along one of three paths. The first path flows to stage 2. In this instance, an individual is charged with the reported offence. Secondly, the offence reported flows out of this stage along the path "cleared otherwise". In this instance, we find that there has been an offence reported but after further investigation it was discovered that there was not a crime committed. Thirdly, the offence that was reported goes unsolved.

1.2 Assumptions:

In stage one and for the two "exit flows", ("cleared otherwise" and "unsolved"), the data is presented in terms of number of offences. However, we desired a system in which there would be a uniform "unit of count". Therefore, we converted the number of offences into number of persons. To make this conversion we used the following conversion factor:

$$\frac{\text{persons charged}}{\text{offences cleared by charge}} = \text{(stages)} \qquad \frac{3 + 4}{2}$$

For example, utilizing the murder crime type, the conversion factor would be:

$$\frac{\text{persons charged}}{\text{offences cleared by charge}} = \frac{205}{198} = 1.0035$$

Multiplying each figure, (given in terms of number of offences) by this conversion factor yields a product whose count is number of persons. For example, the number of murder offences reported multiplied by the factor 1.0035 gives an estimate of the number of accused murderers in terms of persons (260).

1.3 Workloads:

The workloads applicable for stage 1 are: Detective Report per hour (workload 1) and Patrolman Report per hour (workload 2). The associated resources to these workloads are detective and patrolman.

Stage 2 - Cleared by Charge

2.1 Description:

This stage represents the number of persons that have been arrested and charged on a particular offence. From this stage, "cleared by charge", the charged person flows into either the juvenile or adult stages.

2.2 Assumptions:

Once again, the figure in this stage has been converted from the number of offences into the number of persons. Thus, using the method described in 1.2 above, the number of adults charged (stage 3) plus the number of juveniles charged (stage 4) equals the number in stage 2 - "cleared by charge".

2.3 Workloads:

The workloads for stage 2 are: Detective Arrest per hour (workload 3) and Patrolman arrest per hour (workload 4). The associated resources for these workloads are detectives and patrolmen, respectively.

Stage 3 - Adults Charged

3.1 Description:

Simply, this stage represents the number of persons 16 years and over (the number of adults) that have been charged on an offence. Stage 3 is different from stage 2 in that only adults are included whereas in stage 2, both juveniles and adults have been included. From stage 3 the individual may flow along one of three paths in the criminal justice system. First of all, the charge may be dropped and thus, the individual would flow out of the system along the exit flow path "charges dropped". Otherwise, depending on the offence type this person may enter into the summary division of the court subsystem or he may proceed into the indictable division of the court subsystem.

3.2 Assumptions:

i) The exit flow path "charges dropped" will indicate the number of charges dropped for crime types that only include indictable offences. For example, the murder crime type has offences that are only indictable. There-

fore, the number of murder charges that have been dropped before reaching the court are represented in the exit flow path "charges dropped". On the other hand, the crime types that include both summary and indictable offences or merely summary offences will have the number of charges dropped in the exit flow path "charges dropped and acquitted" (this exits out of stage 6). We have also assumed that the number of charges dropped for crime types that include only indictable offences is a residual of the difference between the number of indictable offences (converted to persons) (stage 5) and the number of adults charged (stage 3).

ii) In the Manslaughter crime type, there are 64 adults charged (stage 3). However, when we move into the Court subsystem we find that there are 77 indictments (stage 5). Therefore, we have assumed that there has been a number of murder offences that have been reduced to manslaughter. To make our data compatible we changed the number of adults charged on manslaughter from 64 to 77. At the same time, we subtracted this difference, 13, from the number of adults charged (stage 3) on murder.

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1 OF 3

3.3 Workloads:

There are not any workloads applicable to stage 3 because the workloads have been applied to the arrest process in stage 2. Hence, there are no resources applied to this stage.

B. Court Subsystem

The information for this subsystem was gathered from the annual report of "Statistics of Criminal and Other Offences" for 1970 (see reference (10)) produced by the Judicial Division of Statistics Canada. We utilized the following specific tables and information from that report: Table 6A, "Persons Charged and Sentences of Convicted Persons by Nature of Indictable Offence"; Table 13, "Convictions of Offences Punishable on Summary Conviction by Nature of Offence"; Table 18, "Sentences of Convicted Persons by Type of Trial and Offence"; Table 19, "Disposition of Appeals of Offences Punishable on Summary Conviction". We also used data from a table called "Persons Acquitted of an Indictable Offence by Type of Trial". This table was obtained from the Judicial Division

of Statistics Canada in a special computer run. This information was used in stages: 5, 6 to 11, 13, 15, 17, 19, and 21.

B.-1 Indictable Division

Stage 5 - Indictable Offence

5.1 Description:

This stage represents a division in the court subsystem. All adult persons who have been charged on an indictable offence appear in this division of the court subsystem [19/]. The reason for this division in the court subsystem is the apparent differences in the procedures between these two types of offences. Stage 5 also represents the preliminary hearings and the indictment preparation that are necessary for indictable court cases. From stage 5 the individual charged on an indictable offence (or offences) can flow into one of the four different types of court or his charge can be reduced (subject to conviction on a lesser charge).

19/ The exception is the persons who do not appear in court are those who have had the charges dropped.

5.2 Assumptions:

Between the time that an individual is charged and a preliminary hearing there is a bargaining process between the crown (prosecutor) and the defence attorney. At any time during this period the defendant may make a guilty plea or on the other hand, the crown could reduce the charge or completely drop that charge. This bargaining process also takes place after the preliminary hearing and before the case is taken to court. Similarly, the bargaining process may take place during the court proceedings. For example, Robert Hann has estimated that the probability of entering a guilty plea on at least one count in a case (sample of 1,655 cases) is 43.5 percent. Hann also indicated that a defendant pleads guilty in various stages in the court proceedure [20/].

In the model we have not included this bargaining process. Instead, we have assumed:

(1) that all charges are dropped before the preliminary hearing,

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20/ See Chapter 9 in reference (8).

(2) all reductions in charges take place after the preliminary hearing.

More information is required on the bargaining process (called plea-bargaining) and in particular, on the number of charges dropped, the number of reduced charges and the number of guilty pleas to obtain a more complete description of the Canadian C.J.S.

5.3 Workloads:

The workloads applied to stage 5 are associated with preliminary court proceedings. Thus, workload 6 (Magistrate: Arraingment per hour) and workload 9 (District Attorney: Indictment Preparation per hour) are applied to stage 5. The associated resources are Magistrate (resource 3) and District Attorney: Indictment (resource 6).

Stages 7, 8, 9 and 10 - Court Proceeding: Type of Trial

7.1 Description:

These stages represent one of the four types of trials in which the charged individual can be processed. The four types of trials are as follows:

1 - Judge and Jury,

2 - Judge without Jury,

3 - Magistrate with Consent,

4 - Magistrate Absolute.

Depending on the offence with which the individual is charged and his selection of the trial in these offences, he is processed in one of the above four types of trials. For each type of trial in our model the individual goes from a trial to either the exit flow path "Acquitted" or to the convicted stage (stage 11). Theoretically, there should be another exit flow path from each type of trial for those who have had their charges reduced. However, as already mentioned, such disaggregated

data for charges reduced is unavailable in a compatible form in the present Statistics Canada Reports (see reference (5) for more detail).

7.2 Assumptions:

i) In some crime types such as Wounding, Robbery, and Breaking and Entering, it was found that the aggregate number of people who are processed in one of the four types of court proceedings is larger than the number of individuals who appear in stage 5 (indictable offences). For example, in the Robbery crime type there were 1,011 individuals who appeared at stage 5 on this charge while there were 1,028 individuals who went through one of the four types of court proceedures.

Seemingly, there are at least four valid reasons (known to us) that explain this discrepancy. These reasons are:

1. If an individual appeals a conviction and as a result gets a new trial, this person would return to the court process. In this instance the data on court proceedings would include this new trial but this data may not be aggregated as another indictable offence in stage 5.

2. As stated before, this is a steady stage model and consequently, the concentration pertains to only one year. As such, an individual could have been charged and appeared at a preliminary hearing in 1969 although his case did not come to court until 1970. Therefore, the data on preliminary hearings for 1970 would not include this individual. However, the data on court proceedings would include the individual.

3. There could be interaction of an individual between the types of courts. For example, an individual could elect to have his case tried by a magistrate. Later it might be to his advantage to have the case tried by a judge. Possibly, an individual would then be "double counted" in the court proceedings.

4. The individual could have had his charge reduced. Thus, he would not be counted in the preliminary hearing on the lesser charge but would be counted in one of the four types of trials on this lesser charge. For example, an individual could be charged and appear in court for "armed robbery" but have his charge reduced after this court appearance. The individual would then appear in

court on the reduced charge of "breaking and entering" but the data would not indicate this individual had appeared in a preliminary hearing on the new "breaking and entering" charge.

ii) It was mentioned earlier that we did not have the necessary data on the number of guilty pleas. This presents a problem when we try to apply workloads to the court proceedings because persons who plead guilty still show up in the court proceedings and have the same applied workloads as not-guilty pleas. More particularly, these persons who plead guilty will more than likely be included in stage 9, "magistrate with consent" and this is one of the reasons there is such a large number of persons in this court proceeding [21/]. We are therefore forced to assume that all the individuals in the court proceedings do not plead guilty and consequently no "appropriate" adjustment has been made in the application of workloads.

21/ The reason why the individuals who plead guilty go through stage 9 in our model is because of the way the statistics have been aggregated. Rather than having data on a preliminary hearing which would include guilty pleas, the data set only includes the four types of courts and we have assumed that the guilty pleas are incorporated in the "magistrate with consent" type of court.

7.3 Workloads:

i) The workloads for stage 7, Judge and Jury Trial, are Judge: Jury Trial (workload 18). The associated resources for these workloads are Judge (resource 4) and District Attorney (resource 6).

ii) The workloads for each stage 8, 9 and 10 are Judge: Bench Trial (workload 7) per work day and District Attorney: Bench Trial (workload 8) per work day. The associated resources are Judge (resource 4) and District Attorney: Prosecutor (resources), respectively.

Stage 11 - Convicted

11.1 Description:

Stage 11 represents those individuals who are convicted of an offence by one of the four court proceedures. From stage 11 the convicted individual flows through the model into one of the sentencing options. The first three types of sentencing flow out of the system. These exit flow paths are termed suspended sentence, suspended sentence

with probation, and fine. The fourth penalty is institutional and is represented by stage 12 in the model.

11.2 Workloads:

There are no workloads for stage 11 in itself simply because this stage only represents an aggregate number of convictions and no work is required. However, when these convictions are broken down into the disposition of penalties, workloads are necessary for some of the specific penalties. The workload for the exit flow path "suspended with probation" is Probation (workload 11). The associated resource is Probation (resource 7).

Stage 12 - Institution

12.1 Description:

Stage 12 represents the number of convicted individuals who have been institutionalized. At this point in the model the individual may appeal his conviction. This would transfer the individual into stage 13 or "Appeal of Conviction". If the individual does not appeal the conviction he will remain in the correctional institution.

12.2 Workloads:

Before we apply workloads to the institutionalized individuals we must know how many individuals remain in the institution after the appeals of conviction and the appeals of sentence. This way, we avoid applying unnecessary workloads to the individuals who get an acquittal, a new trial or a suspended sentence. Therefore, the workloads and the associated resources for the institution are applied in stage 16.

Stage 13 - Appeal of Conviction

13.1 Description:

This stage indicates the number of persons who have been convicted and appeal that conviction. From stage 13 the individual may exit out of the system in one of two ways. The individual may be found innocent and thus, flow out of the system by the "acquitted" exit flow path. Secondly, an individual may exit out of the model via the exit flow path "new trial". However, the individual

would return to the system by re-entering one of the four trial stages [22/].

On the other hand, if the individual does not exit out of the system he would remain in the system and return to the institution. The individual would return to the institution (stage 14) in one of two ways. The appeal of the conviction could produce a "substituted verdict" and this flow path indicates the number who return on an alterated decision. Secondly, the appeal of the conviction could be dismissed entirely. This number of persons is indicated by the flow path "dismissed".

13.2 Assumptions:

i) We have assumed that the individual who gets a new trial after an appeal of the conviction exits out of the system along exit flow path "new trial". However, in reality this individual would remain in the system but return to the trial procedure. We have included the impact of this individual already in terms of costs and workloads.

22/ Individuals who re-enter one of the four trial stages after obtaining a new trial through an appeal are accounted for by our data.

ii) We have assumed that fines are not appealed simply because the data does not separate the number of fines that are appealed from the number of institutionalized convictions that are appealed. Therefore, there is no way of knowing the exact remainder of fines after these appeals.

13.3 Workloads:

The workload for stage 13 is Judge: Bench Trial (workload 7) per day. The resource associated with workload 7 is a Judge (resource 4).

Stage 14 - Conviction Upheld

14.1 Description:

Stage 14 depicts the residual number of individuals who remain in the institution after the Appeals of the Conviction have taken place. For example, if an individual has been convicted and institutionalized for correctional purposes, appeals his conviction and received an acquittal, the remainder in the institution or

stage 14 is reduced by one. However, the biggest proportion of the convicted, institutionalized individuals remain in the institution. From stage 14 the individual has the choice of appealing his sentence or remaining in the correctional institution allowing the sentence to stand as it is.

14.2 Assumptions:

The only assumption for stage 14 is that the number of individuals in this stage is a residual. That is, the number of individuals in stage 14 is derived by subtracting the exit flow paths (exiting out of stage 13) "Acquitted" and "New Trial" from the number who were originally convicted and sent to an institution (stage 12).

14.3 Workloads:

As mentioned earlier (12.2), the workloads and associated resources for the institution are taken into account in stage 16.

Stage 15 - Appeal of Sentence

15.1 Description:

Stage 15 depicts the number of individuals who have been granted an appeal of the sentence that was previously handed down by the judge or magistrate in one of the four types of courts. As a result of this appeal, the individual could be given a suspended sentence and thus, exits out of the system at the exit flow path "suspended sentence". However, the chances of getting the sentence modified to a suspended sentence are not very good. Otherwise, the individual will return to the institution along either flow path "varied" or "dismissed". The former indicates that the individual's sentence has been varied in stage 15 (Appeal of Sentence). The latter represents the individual who has had his original sentence upheld.

15.2 Workloads:

The workload for the appeal of sentence (stage 15) is Judge: Bench Trial (workload 7) per day. The associated resource is a Judge (resource 4).

C. Corrections Subsystem

The Corrections Subsystem includes the institution (stage 16) and the exit flow paths aggregated as Parole Releases. The exit flow paths indicate the disposition of the types of supervision of the parole releases which include "private", "public", "Parole service", "other" and "no supervision". Each one of these types of supervision flows out of the system along their respective exit flow paths. Stage 22 (the correctional institution for summary convictions) also comprises the Correction Subsystem. The data on the parole releases was obtained through the Judicial Division of Statistics Canada. The information was taken out of the National Parole Board's "Statistics 1970" Report. Specifically, we utilized Table 2.9 in that report.

Stage 16 - Institution

16.1 Description:

Stage 16 depicts the number of individuals who remain in the correctional institution until the end of the

sentence or until the individual is released on parole. Thus, from stage 16 an individual can exit from the system in one of two release procedures. First, an individual can flow out of the system along the exit flow path "release". In this case, the person has complete liberty with no supervision. Second, an individual may exit out of the institution (after a specified period of the sentence) along one of the five exit flow paths of parole releases. The five exit flow paths are: "private", "public", "parole service", "other" and "no supervision".

16.2 Assumptions:

i) The number of individuals in the correctional institution is determined by subtracting the number of suspended sentences (exit flow path from stage 15) from the number of individuals in stage 14 (conviction upheld). Therefore, the number in stage 16 is a residual not a number from the Statistics Canada Reports.

ii) We have assumed that the number of parole releases for 1970 is a representative proportion of the number of individuals in the institution (stage 16). How-

ever, because this is a steady state model the number of paroles in 1970 is not necessarily representative of the population that was institutionalized in 1970. For example, in the "Rape" crime type there were 88 parole releases in 1970 while there were only 46 individuals institutionalized on a rape conviction for that year. Although this proportion of parole releases to the number of institutionalized individuals is not so dramatic in the other crime types, it is evident that the proportion of parole releases does not precisely correspond to the number of persons institutionalized. In instances when the number of parole releases was larger than the number of individuals institutionalized for 1970, we calculated the branching ratios by dividing the number of persons in each type of parole by the total number of parolees for that year.

16.3 Workloads:

i) The workload for stage 16 is institution (workload 13) per year. The associated resource to workload 13 is the institution (resource 9).

ii) The workload for the exit flow path "Public" is parole (workload 12) per year. The associated resource for this workload is parole (resource 8).

iii) The workload for the exit flow path "Parole Service" is parole (workload 12) per year. The associated resource for workload 12 is parole (resource 8).

B.-2 Court Subsystem Summary Division

Stage 6 - Summary Offences

6.1 Description:

Stage 6 represents the beginning of the summary division in the court subsystem. Thus, the number of adults who have been charged and appear in court on a summary offence are indicated in stage 6. Stage 6 also depicts the court proceedings for these summary offences. That is, the number of summary trials are indicated in this stage. From stage 6 the individual charged on a summary offence can flow in one of two directions. In the first case, the individual can flow out of the system along the

exit flow path "charges dropped and acquitted". This exit indicates the number of summary charges and the number of summary and indictable charges (i.e., the crime types which have both summary and indictable offences) that have been dropped. These charges may have been dropped any time prior to the court proceedings or during the court proceedings. This exit flow path also indicates the number of individuals who have had their summary charges acquitted. In the second case, the individual may be convicted on the summary charge. Hence, this individual would flow to stage 17, "convicted".

6.2 Assumptions:

i) Because the number of adults charged on summary offences was not recorded in any statistical reports we assumed that the number of individuals charged on summary offences is the difference between the number of adults charged (stage 3) and the number of Indictable Offences (stage 5). For example, in the Fraud crime type there were 11,761 adults charged and of these, 4,171 were charged on an indictable offence. Therefore, we assumed that there were 7,590 adults charged on summary offences.

This, of course, is not a precise figure. A precise number of summary offences could be produced only by court count since some of these charges may have been dropped.

ii) The second assumption involves the exit flow path "charges dropped and acquitted". Similar to the assumption above, we have used a residual to produce the number of individuals who have had charges dropped or have been acquitted on the summary charge. We assumed that the number of individuals who were acquitted or who had the charge dropped was the difference between the number of persons convicted (stage 17) and the number of summary offences (stage 6). For example, in the Offensive Weapons crime type we subtracted 1,103 persons convicted from 1,209 summary offences yeilding a difference of 106 persons who had their charges dropped or received acquittals. Ideally, we would like to have an exact count of the number of individuals who had their charges dropped, since if the charge was dropped before entrance to this stage, the court resources would not have to be applied to it.

6.3 Workloads:

The workload for stage 6 is a Magistrate: Summary Hearing per man hour (workload 5). The associated resource for workload 5 is a Magistrate (resource 3).

Stage 17 - Convicted

17.1 Description:

Stage 17 indicates the proportion of individuals who have been convicted on the summary offence. These convicted individuals are processed in one of five ways. Four of these five sentence options exit out of the system from stage 17. These exit flow paths include: "fine", "suspended sentence", "suspended sentence with probation" and "other". The fifth sentence option is incarceration. An incarcerated individual would flow from stage 17 to the institution stage (stage 18).

17.2 Assumptions:

The data available for stage 17 and the "exit flows", ("fine", "suspended sentence with probation", "suspended sentence" and "institution"), is presented in terms of number of offences. Therefore, to achieve a system with a uniform "number of count" we converted the number of convictions of offences into the number of persons convicted. To make this conversion we used the following conversion factor:

$$\frac{\text{persons convicted by indictable offences}}{\text{convictions of indictable offences}}$$

For example, using the assault crime type the conversion factor would be:

$$\frac{\text{persons convicted by indictable offences}}{\text{convictions of indictable offences}} = \frac{4,403}{5,372} = 0.81962$$

Multiplying each figure (given in terms of number of offences), by this conversion factor yields a product with

a count in terms of numbers of persons. For example, the number of summary assault convictions multiplied by the factor 0.81962 gives the number of persons convicted on this summary assault charge (6,327).

17.3 Workloads:

There are no workloads for stage 17 in itself. However, there are workloads related to the exit flow path "suspended sentence with probation". The workload for this exit flow path is probation (workload 11). The associated resource is probation (resource 7).

Stage 18 - Institution

18.1 Description:

Stage 18 depicts the proportion of the individuals who have been convicted on a summary offence and have been incarcerated. From stage 18 each individual may appeal his conviction (stage 19) or remain in the institution (stage 20) with the present conviction. Usually, only a small percentage of these individuals are granted appeals of their convictions as can be seen from the data in Appendix B.

18.2 Workloads:

The workloads and associated resources for the institution are tabulated in stage 22. They are calculated later because there are a few individuals who exit out of the system from the later appeal stages.

Stage 19 - Appeal of Conviction

19.1 Description:

Stage 19 (appeal of conviction) is similar to stage 13 in the indictable division of the Court subsystem. However, stage 19 indicates the number of incarcerated individuals who have appealed their summary conviction while stage 13 represents the number of incarcerated individuals who have appealed their indictable conviction. From stage 19 the individual can flow out of the system in one of two ways or remain in the criminal justice system by flowing back into the institution or "conviction upheld", stage 20. The individual can flow out of the system by getting an acquittal or receiving a new trial [23/]. The acquittal

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23/ If the individual receives a new trial by appealing his conviction, he does not really exit out of the system. Instead, this individual would return to one of the types of trial. However, this is a flow model and we have for convenience, exited these individuals out of the system.

exits the individual out of the system at the exit flow path "Acquitted". If the individual receives a new trial by the appeal he exits out along the exit flow path "new trial". On the other hand, the individual may return to the institution along either one of the "dismissed" or the "substituted verdict" flow paths. The "dismissed" flow path represents a lost "appeal of conviction" and thus, the defendent returns to the institution. In the other case, the individual's appeal of conviction may change the verdict, consequently moving the individual back into the institution, but on a lesser charge.

19.2 Assumptions:

We have assumed that only those individuals who are incarcerated appeal their conviction and sentence. (This eliminates the individuals who have been convicted and penalized with a fine.) We presented the information in this form because the data did not separate the number of fined individuals from the number of incarcerated individuals who appeal their conviction.

Stage 20 - Conviction Upheld

20.1 Description:

Stage 20 represents the number of individuals who remain in the institution after the appeals of the summary conviction have been made. For example, in the Assaults crime type (in 1970) 97% of the incarcerated individuals remain in the institution after the appeals of conviction have been made. From stage 20, some of the incarcerated individuals have grounds for appealing their sentence while others simply remain in the institution without any further appeal. The individual who appeals goes to stage 21 while the individual who is "satisfied" with his sentence flows to stage 22.

20.2 Assumptions:

The only assumption in this stage is that the figure representing the number of individuals in stage 20 is a residual. That is, we subtracted the number of individuals who were acquitted or received a new trial from the original number of incarcerations (stage 18).

20.3 Workloads:

The appropriate workloads and associated resources for the institution are calculated in stage 22.

Stage 21 - Appeal of Sentence

2.1. Description:

Stage 21 depicts the number of individuals who have been given the opportunity to appeal the sentence of their summary conviction. The appeal of sentence could be successful in one of two ways. The appeal could result in a "Suspended Sentence" which exits out of the system. The appeal could also result in a varied sentence, which would normally be less severe. In this case, this individual returns to the institution (stage 22) along the flow path "varied". On the other hand, the appeal could be completely unsuccessful and the sentence remains the same. Thus, the individual flows back to the institution along the flow path "dismissed".

21.2 Workloads:

The workload for the appeal of sentence (stage 21) is Magistrate: Summary Hearing per man hour (workload 5). The associated resource is Magistrate (resource 3).

Stage 22 - Institution

22.1 Description:

Stage 22 indicates the number of individuals who remain in the institution until their release. For example, by examining the Assaults crime type, it is possible to see the percentage of individuals who are incarcerated (stage 22) compared to the number of summary offences (stage 6). In this example, 5% of the summary offences brought to court eventually remain in correctional institution for a period of time. From stage 22 these individuals are ultimately released along the exit flow path "release".

22.2 Assumptions:

To obtain the number of individuals in stage 22 we subtracted the number of individuals who won an appeal of sentence having their penalty reduced to a suspended sentence (i.e., the number of individuals flowing from stage 21 along the exit flow path "suspended sentence") from the number of individuals in stage 20 (conviction upheld).

22.3 Workloads:

The workload for the institution (stage 22) is Jail: Summary Offence per day (workload 10). The resource associated to this workload is the Jail (resource 10).

D. Juvenile Subsystem

The data for the Juvenile Subsystem was obtained from the annual Statistics Canada Report, "Juvenile Delinquents" (see reference (11)). Specifically, this information was taken from the Table called "card 1" in which the

disposition of sentence by the type of delinquency is presented. These statistics are utilized in stages 23 and 24 and the exit flow paths from these stages.

Stage 4 - Juveniles Charged

4.1 Description:

Stage 4 represents the partition of the charges in the system into the juvenile subsystem [24/]. Therefore, stage 4 shows the number of individuals under the age of 18 years (juveniles) that were charged on a delinquency in 1970. From stage 4 the juvenile either exits out of the system along exit flow path "Never Appear in Court" or goes to stage 23, "Appear in Court". For example, some juveniles, perhaps because of lack of evidence or minorness of offence might never appear in court. The juvenile then "never appears in court" and exits out of the system at the corresponding exit flow path. Juveniles could also exit out of the system along this path because the charges were dropped.

24/ The addition of stages 3 - adults charged, and 4 - juveniles charged, sum to the total of stage 2, "Cleared by Charge".

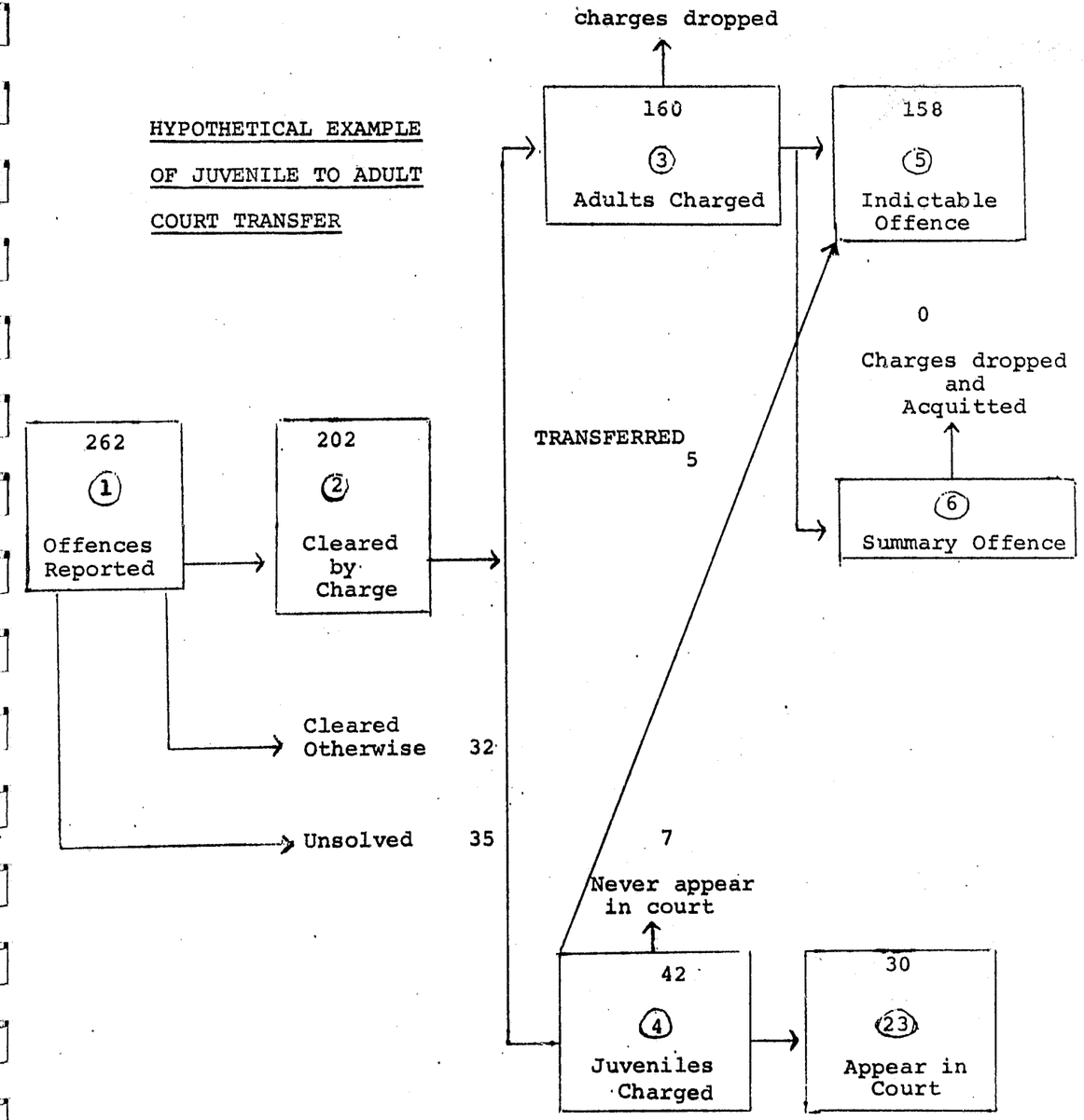
4.2 **Assumptions:**

i) The figure representing the number of juveniles who never appear in court is a residual. That is, we have subtracted the number of juveniles charged, stage 4, from the number of juveniles who appear in court, stage 23, to obtain the number who exit along the flow path "never appear in court".

ii) We have assumed that the number of charged juveniles (stage 4) flow through the juvenile subsystem. However, in some instances this is not exactly the case. For example, it is possible that some juveniles who face charges of murder are transferred into the Adult court subsystem. The reason for this transfer is usually because of the severity of the crime committed. This is the situation in the hypothetical example shown in the diagram below (Figure 4).

FIGURE 4

HYPOTHETICAL EXAMPLE OF JUVENILE TO ADULT COURT TRANSFER



We assume that the juveniles who are charged but do not appear in court exit out of the system at the exit flow path "never appear in court". However, the transfer from Juvenile to Adult Court may exist implicitly in our model if the defendant shows up in later statistics.

4.3 Workloads:

There are no workloads for stage 4 because this stage is merely a division of stage 2. That is, stage 4 plus stage 3 are equal to stage 2 and the workloads are applied in the previous stage, stage number two.

Stage 23 - Appear in Court

23.1 Description:

Stage 23 depicts the proportion of juveniles charged who appear in court. This stage also represents all the court processes for the juvenile subsystems. From the court proceedings the juvenile can exit out of the system along one of two exit flow paths or can be found delinquent and flow to stage 24. The first exit flow path

is "dismissed". In this case, the juvenile is found innocent and consequently exits out of the system. The second exit flow path is "adjourned". In this case, the juvenile has actually been found delinquent, but the court has decided that there is no apparent need to discipline this juvenile using any of the methods found exiting from stage 24. However, this juvenile, whose case has been adjourned, may be retrieved by the court at a later time. On the other hand, the juvenile could remain in the system by being found delinquent and consequently flow to stage 24.

23.2 Workloads:

The workloads applied to the juveniles who appear in court, stage 23, are named the Juvenile Judge per work day (workload 14) and the Juvenile Prosecutor per work day (workload 15). The associated resources are the Juvenile Judge (resource 11) and the Juvenile Prosecutor (resource 12), respectively.

Stage 24 - Found Delinquent

24.1 Description:

Stage 24 represents the total number of juveniles who have been found delinquent on a delinquency charge. The number of delinquents are broken down by the disposition of sentence which are depicted by the nine exit flow paths from stage 24. The names of the exit flow paths are self-explanatory and consequently, they merely require a listing in this description. These include: "Reprimand", "Detention", "Repatriated", "Probation", "Transferred", "Fine", "Training School", "Mental Hospital", and "Suspended Sentence".

24.2 Workloads:

There are no specific workloads applicable to stage 24 in itself. However, it is essential to apply workloads to two of the exit flow paths: the workload Juvenile Probation per year (workload 16) is applied to the exit flow path "Probation". The associated resource is Juvenile Probation (resource 13). The workload Juvenile

Institution per year (workload 17) is applied to the exit flow path "Detention". The associated resource is a Juvenile Institution (resource 14).

IV CONCLUSION

The description which has been furnished in the previous section is only a preliminary description of the C.C.J.S. This preliminary description concentrated on the flows for the eight provinces of the C.C.J.S. and the assumptions about the flows that were made in order to obtain the information from the Statistics Canada Reports. Also included in this description was the more general cost and workload estimates. With the flows, costs and workloads it is now possible to test the impact of changes on the total C.C.J.S.

With the present description in mind we are pursuing the research and the analysis in two distinct directions:

1) obtaining further cost workload and flow data specific to the Canadian experience and the C.C.J.S.;

2) beginning to perform some elementary analysis of changes in the C.C.J.S. using the CANJUS model. (JUSSIM with Canadian data and structure.)

The reader is referred to reference (6) for the types of analysis which have been done using the JUSSIM model on some Allegheny County data.

Clearly, the document is not an end in itself. The document and its development have stimulated much interest in developing a more complete statistical description of the C.C.J.S. at a national level. It is being continually up-dated and should hopefully serve as a beginning systems description of the C.C.J.S. and for further causal modelling and analysis of that system in the future.

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APPENDIX A

WORKLOADS

This appendix shows the assumed workloads in the C.C.J.S. The workload is defined as the average time it takes each resource to process one individual in each crime type.

Figure 4 illustrates how the workloads and the associated resources are applied to the C.C.J.S. (Refer to the tables in this appendix for the workload and resource numbers.)

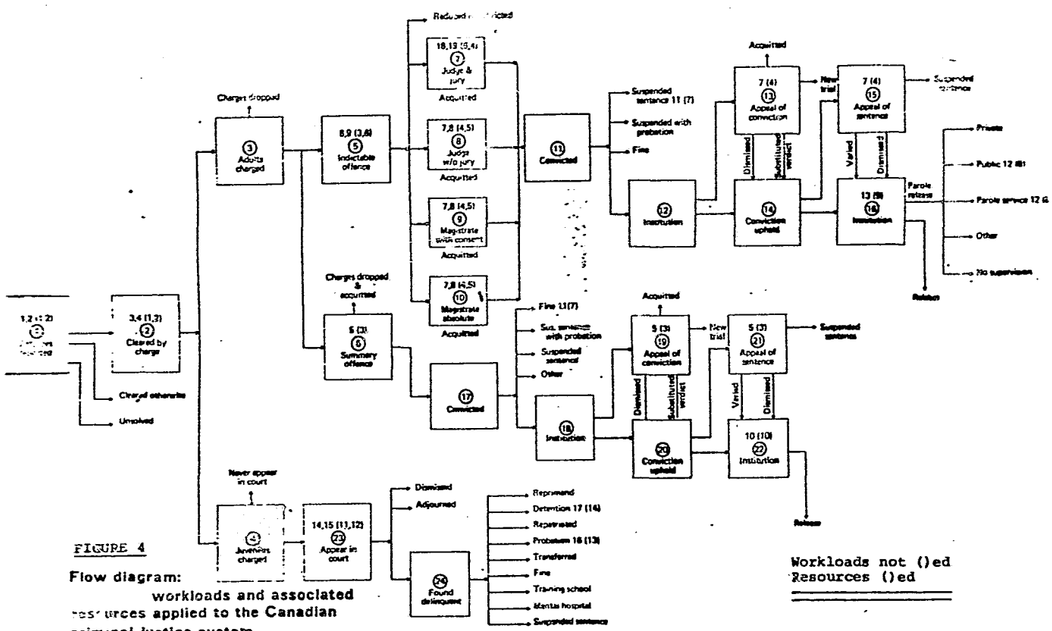


FIGURE 4

Flow diagram: workloads and associated resources applied to the Canadian criminal justice system

Workloads not ()ed
Resources ()ed

CRIME TYPE: MURDER

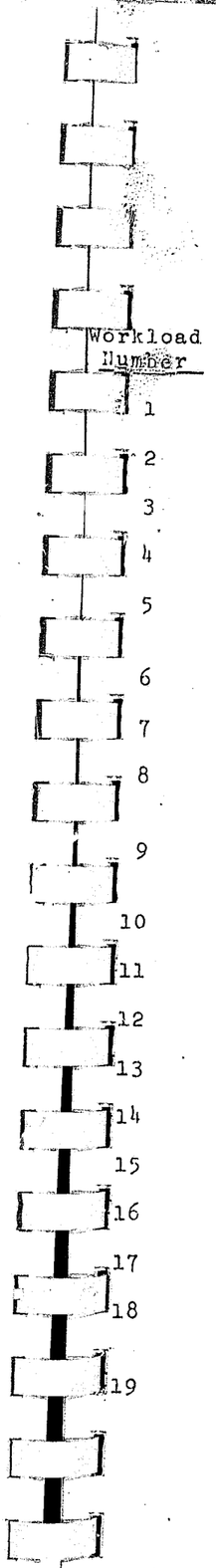
Workload Number	Name	Average Workload	Unit of Time	Associated Resource
1	Detective: Report	15.10	Hour	(1) Detective
2	Patrol: Report	2.00	Hour	(2) Patrolman
3	Detective: Arrest	28.40	Hour	(1) Detective
4	Patrol: Arrest	0.00	Hour	(2) Patrolman
5	Magistrate: Summary Hearing	2.00	Hour	(3) Magistrate
6	Magistrate: Arraignment	0.21	Hour	(3) Magistrate
7	Judge: Bench Trial	0.87	Day	(4) Judge
8	District Attorney: Bench Trial	1.96	Day	(5) District Attorney: Prosecutor
9	District Attorney: Indictment Preparation	2.26	Hour	(6) District Attorney: Indictment
10	Jail: Summary Offence	0.00	Day	(10) Jail
11	Probation	2.50	Year	(7) Probation
12	Parole	1.42	Year	(8) Parole
13	Institution	2.50	Year	(9) Institution
14	Juvenile Judge	0.12	Day	(11) Juvenile Judge
15	Juvenile Prosecutor	1.78	Day	(12) Juvenile Prosecutor
16	Juvenile Probation	0.70	Year	(13) Juvenile Probation
17	Juvenile Institution	0.75	Year	(14) Juvenile Institution
18	District Attorney: Jury Trial	3.35	Day	(6) District Attorney: Indictment
19	Judge: Jury Trial	2.26	Day	(4) Judge

CRIME TYPE: ATTEMPTED MURDER

Workload Number	Name	Average Workload	Unit of Time	Associated Resource
1	Detective: Report	0.00	Hour	(1) Detective
2	Patrol: Report	0.00	Hour	(2) Patrolman
3	Detective: Arrest	0.00	Hour	(1) Detective
4	Patrol: Arrest	1.50	Hour	(2) Patrolman
5	Magistrate: Summary Hearing	0.15	Hour	(3) Magistrate
6	Magistrate: Arraignment	0.15	Hour	(3) Magistrate
7	Judge: Bench Trial	0.17	Day	(4) Judge
8	District Attorney: Bench Trial	0.38	Day	(5) District Attorney: Prosecutor
9	District Attorney: Indictment Preparation	0.54	Hour	(6) District Attorney: Indictment
10	Jail: Summary Offence	14.00	Day	(10) Jail
11	Probation	1.29	Year	(7) Probation
12	Parole	0.86	Year	(8) Parole
13	Institution	0.28	Year	(9) Institution
14	Juvenile Judge	0.12	Day	(11) Juvenile Judge
15	Juvenile Prosecutor	1.78	Day	(12) Juvenile Prosecutor
16	Juvenile Probation	0.70	Year	(13) Juvenile Probation
17	Juvenile Institution	0.75	Year	(14) Juvenile Institution
18	District Attorney: Jury Trial	0.72	Day	(6) District Attorney: Indictment
19	Judge: Jury Trial	0.51	Day	(4) Judge

CRIME TYPE: MANSLAUGHTER

Workload Number	Name	Average Workload	Unit of Time	Associated Resource
1	Detective: Report	0.00	Hour	(1) Detective
2	Patrol: Report	0.00	Hour	(2) Patrolman
3	Detective: Arrest	28.40	Hour	(1) Detective
4	Patrol: Arrest	0.00	Hour	(2) Patrolman
5	Magistrate: Summary Hearing	1.00	Hour	(3) Magistrate
6	Magistrate: Arraignment	0.21	Hour	(3) Magistrate
7	Judge: Bench Trial	0.87	Day	(4) Judge
8	District Attorney: Bench Trial	1.96	Day	(5) District Attorney: Prosecutor
9	District Attorney: Indictment Preparation	1.13	Hour	(6) District Attorney: Indictment
10	Jail: Summary Offence	0.00	Day	(10) Jail
11	Probation	2.06	Year	(7) Probation
12	Parole	1.15	Year	(8) Parole
13	Institution	2.50	Year	(9) Institution
14	Juvenile Judge	0.12	Day	(11) Juvenile Judge
15	Juvenile Prosecutor	1.78	Day	(12) Juvenile Prosecutor
16	Juvenile Probation	0.70	Year	(13) Juvenile Probation
17	Juvenile Institution	0.75	Year	(14) Juvenile Institution
18	District Attorney: Jury Trial	3.35	Day	(6) District Attorney: Indictment
19	Judge: Jury Trial	2.26	Day	(4) Judge



CRIME TYPE: RAPE

Workload Number	Name	Average Workload	Unit of Time	Associated Resource
1	Detective: Report	2.10	Hour	(1) Detective
2	Patrol: Report	1.20	Hour	(2) Patrolman
3	Detective: Arrest	14.80	Hour	(1) Detective
4	Patrol: Arrest	0.00	Hour	(2) Patrolman
5	Magistrate: Summary Hearing	0.35	Hour	(3) Magistrate
6	Magistrate: Arraignment	0.21	Hour	(3) Magistrate
7	Judge: Bench Trial	0.64	Day	(4) Judge
8	District Attorney: Bench Trial	1.44	Day	(5) District Attorney: Prosecutor
9	District Attorney: Indictment Preparation	1.13	Hour	(6) District Attorney: Indictment
10	Jail: Summary Offence	0.00	Day	(10) Jail
11	Probation	2.90	Year	(7) Probation
12	Parole	0.33	Year	(8) Parole
13	Institution	1.20	Year	(9) Institution
14	Juvenile Judge	0.12	Day	(11) Juvenile Judge
15	Juvenile Prosecutor	1.78	Day	(12) Juvenile Prosecutor
16	Juvenile Probation	0.70	Year	(13) Juvenile Probation
17	Juvenile Institution	0.75	Year	(14) Juvenile Institution
18	District Attorney: Jury Trial	2.46	Day	(6) District Attorney: Indictment
19	Judge: Jury Trial	1.16	Day	(4) Judge

CRIME TYPE: OTHER SEXUAL OFFENCES

Workload Number	Name	Average Workload	Unit of Time	Associated Resource
1	Detective: Report	0.00	Hour	(1) Detective
2	Patrol: Report	0.00	Hour	(2) Patrolman
3	Detective: Arrest	15.00	Hour	(1) Detective
4	Patrol: Arrest	0.00	Hour	(2) Patrolman
5	Magistrate: Summary Hearing	0.22	Hour	(3) Magistrate
6	Magistrate: Arraignment	0.15	Hour	(3) Magistrate
7	Judge: Bench Trial	0.17	Day	(4) Judge
8	District Attorney: Bench Trial	0.38	Day	(5) District Attorney: Prosecutor
9	District Attorney: Indictment Preparation	0.54	Hour	(6) District Attorney: Indictment
10	Jail: Summary Offence	12.00	Day	(10) Jail
11	Probation	1.77	Year	(7) Probation
12	Parole	0.57	Year	(8) Parole
13	Institution	1.50	Year	(9) Institution
14	Juvenile Judge	0.12	Day	(11) Juvenile Judge
15	Juvenile Prosecutor	1.78	Day	(12) Juvenile Prosecutor
16	Juvenile Probation	0.70	Year	(13) Juvenile Probation
17	Juvenile Institution	0.75	Year	(14) Juvenile Institution
18	District Attorney: Jury Trial	0.72	Day	(6) District Attorney: Indictment
19	Judge: Jury Trial	0.51	Day	(4) Judge

CRIME TYPE: WOUNDING

Workload Number	Name	Average Workload	Unit of Time	Associated Resource
1	Detective: Report	2.00	Hour	(1) Detective
2	Patrol: Report	0.60	Hour	(2) Patrolman
3	Detective: Arrest	6.10	Hour	(1) Detective
4	Patrol: Arrest	0.00	Hour	(2) Patrolman
5	Magistrate: Summary Hearing	0.24	Hour	(3) Magistrate
6	Magistrate: Arraignment	0.21	Hour	(3) Magistrate
7	Judge: Bench Trial	0.64	Day	(4) Judge
8	District Attorney: Bench Trial	1.44	Day	(5) District Attorney: Prosecutor
9	District Attorney: Indictment Preparation	1.13	Hour	(6) District Attorney: Indictment
10	Jail: Summary Offence	0.00	Day	(10) Jail
11	Probation	2.47	Year	(7) Probation
12	Parole	0.97	Year	(8) Parole
13	Institution	0.53	Year	(9) Institution
14	Juvenile Judge	0.12	Day	(11) Juvenile Judge
15	Juvenile Prosecutor	1.78	Day	(12) Juvenile Prosecutor
16	Juvenile Probation	0.70	Year	(13) Juvenile Probation
17	Juvenile Institution	0.75	Year	(14) Juvenile Institution
18	District Attorney: Jury Trial	1.26	Day	(6) District Attorney: Indictment
19	Judge: Jury Trial	0.78	Day	(4) Judge

CONTINUED

2 OF 3

CRIME TYPE: ASSAULTS (not indecent)

Workload Number	Name	Average Workload	Unit of Time	Associated Resource
1	Detective: Report	0.00	Hour	(1) Detective
2	Patrol: Report	0.00	Hour	(2) Patrolman
3	Detective: Arrest	0.00	Hour	(1) Detective
4	Patrol: Arrest	1.50	Hour	(2) Patrolman
5	Magistrate: Summary Hearing	0.15	Hour	(3) Magistrate
6	Magistrate: Arraignment	0.15	Hour	(3) Magistrate
7	Judge: Bench Trial	0.17	Day	(4) Judge
8	District Attorney: Bench Trial	0.38	Day	(5) District Attorney: Prosecutor
9	District Attorney: Indictment Preparation	0.54	Hour	(6) District Attorney: Indictment
10	Jail: Summary Offence	14.00	Day	(10) Jail
11	Probation	1.29	Year	(7) Probation
12	Parole	0.86	Year	(8) Parole
13	Institution	0.28	Year	(9) Institution
14	Juvenile Judge	0.12	Day	(11) Juvenile Judge
15	Juvenile Prosecutor	1.78	Day	(12) Juvenile Prosecutor
16	Juvenile Probation	0.70	Year	(13) Juvenile Probation
17	Juvenile Institution	0.75	Year	(14) Juvenile Institution
18	District Attorney: Jury Trial	0.72	Day	(6) District Attorney: Indictment
19	Judge: Jury Trial	0.51	Day	(4) Judge

CRIME TYPE: ROBBERY

Workload Number	Name	Average Workload	Unit of Time	Associated Resource
1	Detective: Report	2.80	Hour	(1) Detective
2	Patrol: Report	0.00	Hour	(2) Patrolman
3	Detective: Arrest	12.90	Hour	(1) Detective
4	Patrol: Arrest	0.00	Hour	(2) Patrolman
5	Magistrate: Summary Hearing	0.24	Hour	(3) Magistrate
6	Magistrate: Arraignment	0.21	Hour	(3) Magistrate
7	Judge: Bench Trial	0.64	Day	(4) Judge
8	District Attorney: Bench Trial	1.44	Day	(5) District Attorney: Prosecutor
9	District Attorney: Indictment Preparation	1.32	Hour	(6) District Attorney: Indictment
10	Jail: Summary Offence	0.00	Day	(10) Jail
11	Probation	3.86	Year	(7) Probation
12	Parole	1.21	Year	(8) Parole
13	Institution	1.85	Year	(9) Institution
14	Juvenile Judge	0.12	Day	(11) Juvenile Judge
15	Juvenile Prosecutor	1.78	Day	(12) Juvenile Prosecutor
16	Juvenile Probation	0.70	Year	(13) Juvenile Probation
17	Juvenile Institution	0.75	Year	(14) Juvenile Institution
18	District Attorney: Jury Trial	2.46	Day	(6) District Attorney: Indictment
19	Judge: Jury Trial	1.66	Day	(4) Judge

CRIME TYPE: BREAKING & ENTERING

Workload Number	Name	Average Workload	Unit of Time	Associated Resource
1	Detective: Report	1.30	Hour	(1) Detective
2	Patrol: Report	0.90	Hour	(2) Patrolman
3	Detective: Arrest	10.00	Hour	(1) Detective
4	Patrol: Arrest	0.00	Hour	(2) Patrolman
5	Magistrate: Summary Hearing	0.22	Hour	(3) Magistrate
6	Magistrate: Arraignment	0.21	Hour	(3) Magistrate
7	Judge: Bench Trial	0.64	Day	(4) Judge
8	District Attorney: Bench Trial	1.44	Day	(5) District Attorney: Prosecutor
9	District Attorney: Indictment Preparation	1.32	Hour	(6) District Attorney: Indictment
10	Jail: Summary Offence	0.00	Day	(10) Jail
11	Probation	2.90	Year	(7) Probation
12	Parole	1.03	Year	(8) Parole
13	Institution	0.76	Year	(9) Institution
14	Juvenile Judge	0.12	Day	(11) Juvenile Judge
15	Juvenile Prosecutor	1.78	Day	(12) Juvenile Prosecutor
16	Juvenile Probation	0.70	Year	(13) Juvenile Probation
17	Juvenile Institution	0.75	Year	(14) Juvenile Institution
18	District Attorney: Jury Trial	2.46	Day	(6) District Attorney: Indictment
19	Judge: Jury Trial	1.66	Day	(4) Judge

CRIME TYPE: THEFT OF MOTOR VEHICLE

Workload Number	Name	Average Workload	Unit of Time	Associated Resource
1	Detective: Report	0.60	Hour	(1) Detective
2	Patrol: Report	0.70	Hour	(2) Patrolman
3	Detective: Arrest	8.20	Hour	(1) Detective
4	Patrol: Arrest	0.00	Hour	(2) Patrolman
5	Magistrate: Summary Hearing	0.14	Hour	(3) Magistrate
6	Magistrate: Arraignment	0.21	Hour	(3) Magistrate
7	Judge: Bench Trial	0.64	Day	(4) Judge
8	District Attorney: Bench Trial	1.44	Day	(5) District Attorney: Prosecutor
9	District Attorney: Indictment Preparation	1.32	Hour	(6) District Attorney: Indictment
10	Jail: Summary Offence	0.00	Day	(10) Jail
11	Probation	2.00	Year	(7) Probation
12	Parole	1.07	Year	(8) Parole
13	Institution	0.25	Year	(9) Institution
14	Juvenile Judge	0.12	Day	(11) Juvenile Judge
15	Juvenile Prosecutor	1.78	Day	(12) Juvenile Prosecutor
16	Juvenile Probation	0.70	Year	(13) Juvenile Probation
17	Juvenile Institution	0.75	Year	(14) Juvenile Institution
18	District Attorney: Jury Trial	2.46	Day	(6) District Attorney: Indictment
19	Judge: Jury Trial	1.66	Day	(4) Judge

CRIME TYPE: THEFT

Workload Number	Name	Average Workload	Unit of Time	Associated Resource
1	Detective: Report	2.30	Hour	(1) Detective
2	Patrol: Report	0.60	Hour	(2) Patrolman
3	Detective: Arrest	18.60	Hour	(1) Detective
4	Patrol: Arrest	0.00	Hour	(2) Patrolman
5	Magistrate: Summary Hearing	0.15	Hour	(3) Magistrate
6	Magistrate: Arraignment	0.21	Hour	(3) Magistrate
7	Judge: Bench Trial	0.64	Day	(4) Judge
8	District Attorney: Bench Trial	1.44	Day	(5) District Attorney: Prosecutor
9	District Attorney: Indictment Preparation	1.32	Hour	(6) District Attorney: Indictment
10	Jail: Summary Offence	16.00	Day	(10) Jail
11	Probation	2.06	Year	(7) Probation
12	Parole	1.15	Year	(8) Parole
13	Institution	2.50	Year	(9) Institution
14	Juvenile Judge	0.12	Day	(11) Juvenile Judge
15	Juvenile Prosecutor	1.78	Day	(12) Juvenile Prosecutor
16	Juvenile Probation	0.70	Year	(13) Juvenile Probation
17	Juvenile Institution	0.75	Year	(14) Juvenile Institution
18	District Attorney: Jury Trial	3.35	Day	(6) District Attorney: Indictment
19	Judge: Jury Trial	2.26	Day	(4) Judge

CRIME TYPE: HAVE STOLEN GOODS

Workload Number	Name	Average Workload	Unit of Time	Associated Resource
1	Detective: Report	0.00	Hour	(1) Detective
2	Patrol: Report	0.00	Hour	(2) Patrolman
3	Detective: Arrest	10.00	Hour	(1) Detective
4	Patrol: Arrest	0.00	Hour	(2) Patrolman
5	Magistrate: Summary Hearing	0.17	Hour	(3) Magistrate
6	Magistrate: Arraignment	0.15	Hour	(3) Magistrate
7	Judge: Bench Trial	0.17	Day	(4) Judge
8	District Attorney: Bench Trial	0.38	Day	(5) District Attorney: Prosecutor
9	District Attorney: Indictment Preparation	0.54	Hour	(6) District Attorney: Indictment
10	Jail: Summary Offence	16.00	Day	(10) Jail
11	Probation	2.11	Year	(7) Probation
12	Parole	1.00	Year	(8) Parole
13	Institution	1.02	Year	(9) Institution
14	Juvenile Judge	0.12	Day	(11) Juvenile Judge
15	Juvenile Prosecutor	1.78	Day	(12) Juvenile Prosecutor
16	Juvenile Probation	0.70	Year	(13) Juvenile Probation
17	Juvenile Institution	0.75	Year	(14) Juvenile Institution
18	District Attorney: Jury Trial	0.72	Day	(6) District Attorney: Indictment
19	Judge: Jury Trial	0.51	Day	(4) Judge

CRIME TYPE: FRAUDS

Workload Number	Name	Average Workload	Unit of Time	Associated Resource
1	Detective: Report	0.00	Hour	(1) Detective
2	Patrol: Report	0.00	Hour	(2) Patrolman
3	Detective: Arrest	10.00	Hour	(1) Detective
4	Patrol: Arrest	0.00	Hour	(2) Patrolman
5	Magistrate: Summary Hearing	0.18	Hour	(3) Magistrate
6	Magistrate: Arraignment	0.15	Hour	(3) Magistrate
7	Judge: Bench Trial	0.64	Day	(4) Judge
8	District Attorney: Bench Trial	0.86	Day	(5) District Attorney: Prosecutor
9	District Attorney: Indictment Preparation	3.00	Hour	(6) District Attorney: Indictment
10	Jail: Summary Offence	12.00	Day	(10) Jail
11	Probation	2.30	Year	(7) Probation
12	Parole	1.03	Year	(8) Parole
13	Institution	0.49	Year	(9) Institution
14	Juvenile Judge	0.12	Day	(11) Juvenile Judge
15	Juvenile Prosecutor	1.78	Day	(12) Juvenile Prosecutor
16	Juvenile Probation	0.70	Year	(13) Juvenile Probation
17	Juvenile Institution	0.75	Year	(14) Juvenile Institution
18	District Attorney: Jury Trial	1.62	Day	(6) District Attorney: Indictment
19	Judge: Jury Trial	1.14	Day	(4) Judge

CRIME TYPE: PROSTITUTION

Workload Number	Name	Average Workload	Unit of Time	Associated Resource
1	Detective: Report	0.00	Hour	(1) Detective
2	Patrol: Report	0.00	Hour	(2) Patrolman
3	Detective: Arrest	15.00	Hour	(1) Detective
4	Patrol: Arrest	0.00	Hour	(2) Patrolman
5	Magistrate: Summary Hearing	0.21	Hour	(3) Magistrate
6	Magistrate: Arraignment	0.15	Hour	(3) Magistrate
7	Judge: Bench Trial	0.13	Day	(4) Judge
8	District Attorney: Bench Trial	0.29	Day	(5) District Attorney: Prosecutor
9	District Attorney: Indictment Preparation	0.62	Hour	(6) District Attorney: Indictment
10	Jail: Summary Offence	12.00	Day	(10) Jail
11	Probation	1.19	Year	(7) Probation
12	Parole	0.29	Year	(8) Parole
13	Institution	0.90	Year	(9) Institution
14	Juvenile Judge	0.12	Day	(11) Juvenile Judge
15	Juvenile Prosecutor	1.78	Day	(12) Juvenile Prosecutor
16	Juvenile Probation	0.70	Year	(13) Juvenile Probation
17	Juvenile Institution	0.75	Year	(14) Juvenile Institution
18	District Attorney: Jury Trial	0.55	Day	(6) District Attorney: Indictment
19	Judge: Jury Trial	0.39	Day	(4) Judge

CRIME TYPE: GAMING & BETTING

Workload Number	Name	Average Workload	Unit of Time	Associated Resource
1	Detective: Report	0.00	Hour	(1) Detective
2	Patrol: Report	0.00	Hour	(2) Patrolman
3	Detective: Arrest	15.00	Hour	(1) Detective
4	Patrol: Arrest	0.00	Hour	(2) Patrolman
5	Magistrate: Summary Hearing	0.15	Hour	(3) Magistrate
6	Magistrate: Arraignment	0.15	Hour	(3) Magistrate
7	Judge: Bench Trial	0.13	Day	(4) Judge
8	District Attorney: Bench Trial	0.29	Day	(5) District Attorney: Prosecutor
9	District Attorney: Indictment Preparation	0.54	Hour	(6) District Attorney: Indictment
10	Jail: Summary Offence	0.00	Day	(10) Jail
11	Probation	0.96	Year	(7) Probation
12	Parole	0.08	Year	(8) Parole
13	Institution	1.00	Year	(9) Institution
14	Juvenile Judge	0.12	Day	(11) Juvenile Judge
15	Juvenile Prosecutor	1.78	Day	(12) Juvenile Prosecutor
16	Juvenile Probation	0.70	Year	(13) Juvenile Probation
17	Juvenile Institution	0.75	Year	(14) Juvenile Institution
18	District Attorney: Jury Trial	0.55	Day	(6) District Attorney: Indictment
19	Judge: Jury Trial	0.39	Day	(4) Judge

CRIME TYPE: OFFENSIVE WEAPONS

Workload Number	Name	Average Workload	Unit of Time	Associated Resource
1	Detective: Report	0.00	Hour	(1) Detective
2	Patrol: Report	0.00	Hour	(2) Patrolman
3	Detective: Arrest	0.00	Hour	(1) Detective
4	Patrol: Arrest	1.00	Hour	(2) Patrolman
5	Magistrate: Summary Hearing	0.10	Hour	(3) Magistrate
6	Magistrate: Arraignment	0.15	Hour	(3) Magistrate
7	Judge: Bench Trial	0.13	Day	(4) Judge
8	District Attorney: Bench Trial	0.29	Day	(5) District Attorney: Prosecutor
9	District Attorney: Indictment Preparation	0.54	Hour	(6) District Attorney: Indictment
10	Jail: Summary Offence	19.00	Day	(10) Jail
11	Probation	1.34	Year	(7) Probation
12	Parole	0.56	Year	(8) Parole
13	Institution	1.50	Year	(9) Institution
14	Juvenile Judge	0.12	Day	(11) Juvenile Judge
15	Juvenile Prosecutor	1.78	Day	(12) Juvenile Prosecutor
16	Juvenile Probation	0.70	Year	(13) Juvenile Probation
17	Juvenile Institution	0.75	Year	(14) Juvenile Institution
18	District Attorney: Jury Trial	0.56	Day	(6) District Attorney: Indictment
19	Judge: Jury Trial	0.39	Day	(4) Judge

CRIME TYPE: "OTHER"

Workload Number	Name	Average Workload	Unit of Time	Associated Resource
1	Detective: Report	0.00	Hour	(1) Detective
2	Patrol: Report	0.00	Hour	(2) Patrolman
3	Detective: Arrest	0.00	Hour	(1) Detective
4	Patrol: Arrest	1.40	Hour	(2) Patrolman
5	Magistrate: Summary Hearing	0.16	Hour	(3) Magistrate
6	Magistrate: Arraignment	0.15	Hour	(3) Magistrate
7	Judge: Bench Trial	0.12	Day	(4) Judge
8	District Attorney: Bench Trial	1.07	Day	(5) District Attorney: Prosecutor
9	District Attorney: Indictment Preparation	0.64	Hour	(6) District Attorney: Indictment
10	Jail: Summary Offence	11.00	Day	(10) Jail
11	Probation	1.78	Year	(7) Probation
12	Parole	0.52	Year	(8) Parole
13	Institution	0.34	Year	(9) Institution
14	Juvenile Judge	0.12	Day	(11) Juvenile Judge
15	Juvenile Prosecutor	1.78	Day	(12) Juvenile Prosecutor
16	Juvenile Probation	0.70	Year	(13) Juvenile Probation
17	Juvenile Institution	0.75	Year	(14) Juvenile Institution
18	District Attorney: Jury Trial	0.55	Day	(6) District Attorney: Indictment
19	Judge: Jury Trial	0.36	Day	(4) Judge

APPENDIX B

READABLE DATA FILE

This appendix illustrates the data file that has been generated for the C.C.J.S. The information in this file has been input into the computer. As such, when the parameters of the model are changed (see Table 8), CANJUS uses this data base to calculate new output results.

To the reader, the data file probably has little meaning without some sort of descriptive guide. The following is a brief description of the readable data file *. The diagrams and tables preceding the data file help give the reader a better feel for the information contained in the data file.

Figure 5 represents a breakdown of the number of offences (the total for the 17 crime types) in various stages in the C.C.J.S. Figure 6 then depicts the percentage changes of the stage-to-stage flow of the individuals represented in Figure 5. Table 9 simply presents the order in which the 17 crime types appear in the readable data file.

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* For a more detailed description of a readable data file see pp. 46-59 in reference (1).

TABLE 8

This table shows the questions that CANJUS asks in using the model. If the user answers "YES" to a question the model goes into that particular phase. Then, the user can change the parameter appertaining to that phase. A "NO" response leaves the parameter unchanged.

WELCOME TO VERSION 2 OF JUSSIM ENTER FILE NAME COURT

Do you wish to specify a grouping of crime types ...

Do you wish to read test case from a file ...

Do you wish to specify new branching ratios ...

Do you wish to specify new levels of system flows ...

Do you wish to specify new unit costs ...

Do you wish to specify new annual availabilities per unit resource ...

Do you wish to specify new capacity constraints ...

Do you wish to specify new workloads per unit flow ...

Do you wish to specify desired output ...

Do you wish to redo any phases ...

The first step in creating the readable data file is to state that this is in fact a readable data file. This is shown on line one of the data file. The second line of the data file indicates the number of crime types which are being used in the system. In this system, there are 17 crime types. The fourth and fifth lines of this file depict how the crime types should be grouped. Line four indicates that we wish to keep the crime types separate. That is, the crime type "murder" becomes crime group 1; the crime type "attempted murder" becomes crime group 2 and so on, for the 17 crime types. On the other hand, line five shows that the crime types have been grouped into three crime groups. In this case, the crime types which depict offences against persons and property are aggregated as crime group 1. In each one of the eight phases crime groups are referenced rather than crime types.

Once this crime grouping information has been input the branching ratios for each crime type and each stage must be specified. In specifying the branching ratios CANJUS expects to find certain information on each stage. The first step is to name the stage. The file shows that we have named stage 1 "REPORTED". The next line after naming the stage indicates the workloads that are applied

to that particular stage. For stage 1, workloads 2 and 4 are applied. After stating the workload number(s), the first flow path from stage 1 is specified. The data file shows that we have named this flow path "CHARGE". On the next line, the destination stage of this flow path is specified. In instances where the flow path exits out of the system this is indicated with a '0'. For the "CHARGE" flow path the destination stage is stage 2. After the destination stage the workloads for this flow path are specified. There are no workloads for the "CHARGE" flow path and we have indicated this with an '*'. The next job is to give the branching ratios for this particular flow path for all 17 crime types. For example, the branching ratio for "CHARGE" or the percentage of individuals in the "murder" crime type who flow from stage 1 to stage 2 is 70%. This process is repeated for each stage and for the flow paths related to that stage.

After the branching ratios for the 17 crime types and the 24 stages have been specified, information on the C.C.J.S.'s resources are input into the file. In this file the first resource is detective and is coded as resource 1. The unit of time that is used for this resource must also be stated. The unit of time for the detective resource is hours. On the next line the cost for

this resource per unit of time is given. The detective cost per hour is $7.79. On the same line, the annual time availability for this resource is specified (again using the same unit of time). The detective is available 1,700 hours per year. The last specification for this resource is the capacity constraint. Presently, there are no resource capacity constraints and this is indicated with a 0. This process of giving the resource name, unit of time, resource number, cost per unit of time, annual time availability and the capacity constraint is repeated for each one of the resources in the system.

The next step is to specify the workload information for each one of the 19 workloads *. The first workload in the data file is the "DETECTIVE REPORT". Again, the unit of time must be specified. The unit of time for "DETECTIVE REPORT" is hours. "DETECTIVE REPORT" is then referenced as workload 1. On the next line, the resource that is associated with this workload is given. The resource associated with "DETECTIVE REPORT" is the Detective. Therefore, we have specified the resource

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* A workload has been defined as the amount of processing time at each stage by unit of flow for each crime type.

reference number - 1. On the next line the average time it takes to process one individual for each crime type is stated. This data is given in terms of the unit of time that was previously specified. (For example, the "DETECTIVE REPORT" processing time for one individual in the murder crime type is 15.1 hours.) This information is required for 19 workloads in the system.

Once the workload information is input into the file, we must specify the makeup of each subsystem in the criminal justice system. In this data file, the first subsystem is "POLICE". The next step is to state each resource in the particular subsystem. The first resource is patrolman and the unit of time is hours. On the next line we specify the workloads that are related to that resource. For the patrolman there are two associated resources which are referenced with the workload numbers 2 and 4. This same procedure is taken for each subsystem in the criminal justice system.

The last input into the file is the flows (in this system the flows are persons) in absolute numbers. This only needs to be done for one stage but this stage must be referenced. Therefore, in this file the reference stage is stage 1. The last three lines of the data file give the absolute flows at stage one for each of the 17 crime types.

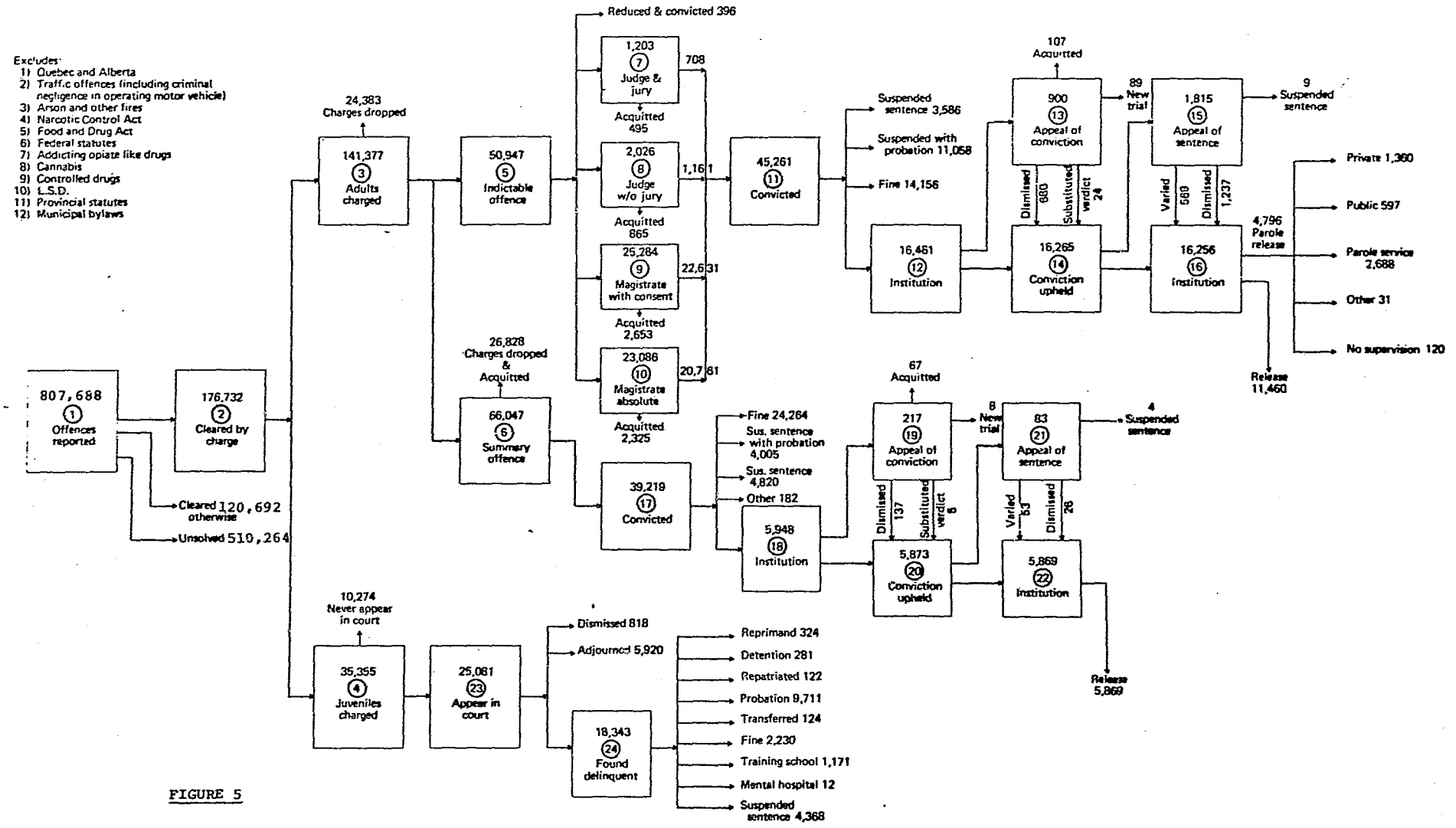

FIGURE 5

Criminal offences in Canada - 1970. Exclusions

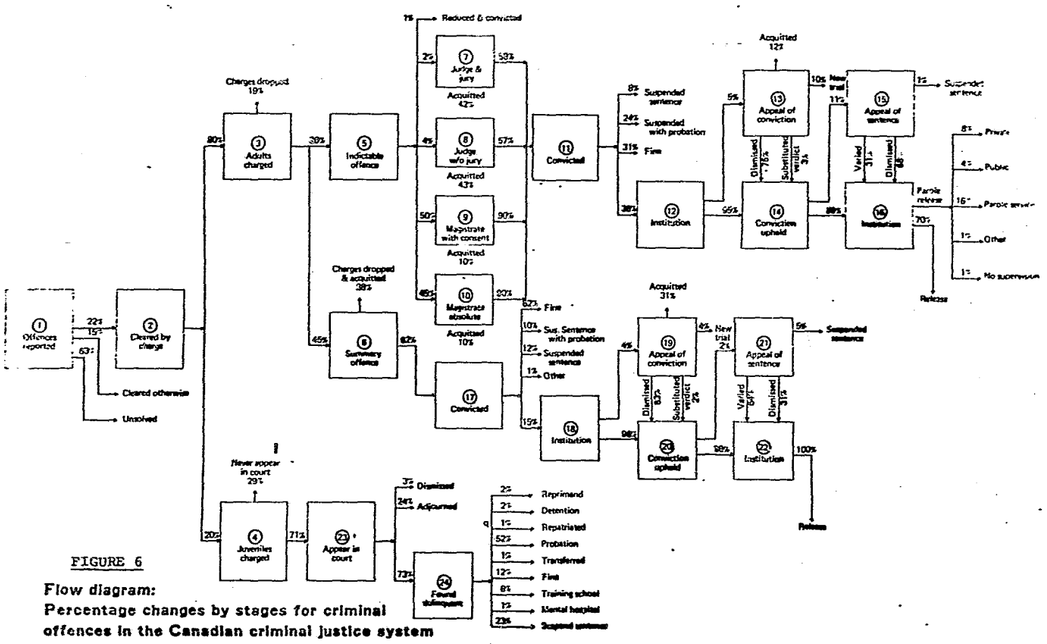

FIGURE 6

Flow diagram:
Percentage changes by stages for criminal offences in the Canadian criminal justice system

TABLE 9 - C.C.J.S. CRIME TYPES

This table lists the order which the 17 crime types appear in the readable data file and should be referenced accordingly.

1. Murder
2. Attempted Murder
3. Manslaughter
4. Rape
5. Other Sexual Offences
6. Wounding
7. Assaults (not indecent)
8. Robbery
9. Breaking and Entering
10. Theft of Motor Vehicle
11. Theft
12. Have Stolen Goods
13. Frauds
14. Prostitution
15. Gaming and Betting
16. Offensive Weapons
17. Other Criminal Offences

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READABLE DATA FILE
17
****
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
1, 1, 1, 1, 1, 1, 3, 1, 1, 2, 1, 1, 3, 3, 3, 3, 3
****
REPORTED STAGE 1
1,2
CHARGE
2
*
70.000 96.000 100.000 50.000 36.600 56.600 34.000 30.000
18.000 19.000 14.000 90.000 46.400 95.000 90.000 77.000
24.000
OTHERWISE
9
*
29.000 2.000 0.000 28.000 16.900 26.000 47.000 5.000
8.000 6.000 11.000 7.000 10.900 1.000 4.000 14.000
21.000
UNSOLVED
0
*
10.000 2.000 0.000 22.000 46.500 17.400 19.000 63.500
74.000 75.000 75.000 3.000 42.700 4.000 5.100 9.000
55.000
****
CHARGED STAGE 2
3,4
A. CHARGE
3
*
90.000 98.000 97.000 91.000 91.000 68.000 95.000 83.000
60.000 64.000 71.000 81.000 97.000 99.600 99.920 93.000
80.000
J.CHARGE
4
*
10.000 2.000 3.000 9.000 9.000 32.000 5.000 17.000
40.000 36.000 29.000 19.000 3.000 0.500 0.080 7.000
11.000

****
A. CHARGED STAGE 3
*
INDICTABLE
5
*
63.000 19.000 100.000 33.000 52.000 47.000 28.000 40.000
48.000 0.000 64.000 59.000 35.000 16.000 14.000 34.000
15.000
SUMMARY
6
*
0.000 0.000 0.000 0.000 0.000 0.000 72.000 0.000
0.000 77.000 0.000 0.000 65.000 84.000 86.000 66.000
85.000
DROPPED
0
*
37.000 81.000 0.000 67.000 48.000 53.000 0.000 50.000
52.000 23.000 36.000 41.000 0.000 0.000 0.000 0.000
0.000
****
JUVCHARGED STAGE 4
*
APPEARCOURT
23
*
33.000 33.000 100.000 33.000 82.000 7.000 91.000 73.000
75.000 17.000 83.000 54.000 64.000 100.000 100.000 62.000
72.000
NOAPPEARANCE
0
*
67.000 67.000 0.000 67.000 18.000 93.000 9.000 27.000
25.000 83.000 17.000 46.000 36.000 0.000 0.000 38.000
28.000

****
UNDICT. OFF. STAGE 5
6,0
REDUCED
0
*
31.000 21.000 7.000 10.000 0.000 0.000 0.000 0.000
0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000
6.000
J. AND J.
7
*
67.000 75.000 92.000 87.000 7.000 14.000 9.000 10.000
2.000 0.000 0.000 3.000 2.000 4.000 11.000 3.000
3.000
J WITHOUT J.
8
*
1.000 0.000 0.000 0.500 13.000 14.000 1.000 13.000
6.000 0.000 1.000 8.000 5.000 22.000 8.000 6.000
5.000
MAG. CON.
9
*
1.000 0.000 0.000 2.000 79.000 69.000 6.000 75.000
91.000 0.000 27.000 62.000 74.000 17.000 2.000 89.000
73.000
MAG. AB.
10
*
0.000 4.000 1.000 0.500 1.000 3.000 03.000 2.000
1.000 0.000 72.000 27.000 10.000 57.000 73.000 3.000
13.000

****
SUMMARYOFF.
5
CONVICTED
17
*
0.000 0.000 0.000 0.000 0.000 0.000 55.000 [illegible]
0.000 53.000 0.000 0.000 14.000 15.000 46.000 [illegible]
70.000
DROPPED
0
*
0.000 0.000 0.000 0.000 0.000 0.000 45.000 [illegible]
0.000 67.000 0.000 0.000 86.000 85.000 54.000 [illegible]
21.000
****
J. AUD JURY
18,19
CONVICTED
11
*
71.000 28.000 92.000 43.000 68.000 69.000 65.000 67.000
53.000 0.000 44.000 42.000 58.000 71.000 32.000 [illegible]
71.000
ACQUITTED
0
*
29.000 72.000 8.000 57.000 32.000 31.000 35.000 [illegible]
47.000 0.000 56.000 58.000 42.000 29.000 68.000 [illegible]
29.000
****
J. W/O JURY
7,8
CONVICTED
11
*
0.000 0.000 0.000 0.000 66.000 68.000 70.000 67.000
60.000 0.000 47.000 51.000 52.000 25.000 33.000 [illegible]
68.000
ACQUITTED
0
*
100.000 0.000 0.000 100.000 34.000 32.000 [illegible] 33.000
40.000 0.000 53.000 41.000 48.000 75.000 67.000 [illegible]
32.000

STAGE 6

STAGE 7

STAGE 8

****
M. CONSENT
7,8
CONVICTED
11
*

0.000	0.000	0.000	0.000	89.000	74.000	65.000	84.000
93.000	0.000	89.000	81.000	90.000	84.000	100.000	84.000
96.000							

ACQUITTED
0
*

100.000	0.000	0.000	100.000	11.000	26.000	35.000	16.000
7.000	0.000	11.000	19.000	10.000	16.000	0.000	16.000
4.000							

****
M. ABSOLUTE
7,8

STAGE 10

CONVICTED
11
*

0.000	0.000	0.000	0.000	0.000	0.000	83.000	0.000
23.000	0.000	93.000	82.000	90.000	87.000	80.000	0.
95.000							

ACQUITTED
0
*

0.000	100.000	100.000	100.000	100.000	100.000	17.000	100.000
77.000	0.000	7.000	18.000	10.000	13.000	20.000	100.000
5.000							

****
CONVICTEDS STAGE 11
*
INSTITUTION
 12
*
  100.000 100.000 100.000 94.000 36.000 74.000 29.000 80.000
   54.000   0.000   24.000 41.000 51.000 31.000   3.000 35.000
   46.000
FINE
  0
*
    0.000   0.000   0.000   0.000 34.000   3.000 51.000   1.000
    1.000   0.000   44.000 17.000 11.000 56.000 90.000 20.000
   30.000
SUSPRPB.
  0
 11
    0.000   0.000   0.000   2.000 25.000 19.000 13.000   8.000
   39.000   0.000   23.000 34.000 29.000 12.000   4.000 25.000
   17.000
SUSSENT.
  0
*
    0.000   0.000   0.000   4.000   5.000   4.000   7.000   2.000
    6.000   0.000   9.000   8.000   9.000   1.000   3.000 11.000
    7.000
****
INSTIT. STAGE 12
*
APPEALCON.
 13
*
   88.000 100.000   6.000 40.000 14.000 10.000   8.000   8.000
    3.000   0.000   3.000   8.000   5.000 10.000 20.000   8.000
    6.000
NO APPEAL
 14
*
   12.000   0.000   94.000 60.000 86.000 90.000 92.000 92.000
   97.000   0.000   97.000 92.000 95.000 90.000 80.000 92.000
   94.000

****
APPEALOFCON.

STAGE 13

7
ACQUITTED
0
*

9.000	16.500	0.000	0.000	5.000	15.000	12.000	9.000
13.000	0.000	13.000	5.000	17.000	0.000	0.000	15.000
18.000							

NEWTRIAL
0
*

17.000	16.500	25.000	11.000	14.000	8.000	6.000	3.000
12.000	0.000	7.000	10.000	17.000	0.000	0.000	11.000
9.000							

SUBVERD.
14
*

0.000	0.000	0.000	0.000	11.000	8.000	3.000	0.000
1.000	0.000	2.000	4.000	0.000	0.000	0.000	4.000
4.000							

DISMISSED
14
*

74.000	67.000	75.000	89.000	70.000	69.000	79.000	89.000
74.000	0.000	78.000	81.000	66.000	100.000	100.000	78.000
69.000							

****
CONUPHELD

STAGE 14

0
APPEALSEN.
15
*

23.000	100.000	27.000	35.000	13.000	16.000	11.000	26.000
12.000	0.000	6.000	14.000	12.000	17.000	100.000	9.000
11.000							

NOAPPSEN.
16
*

77.000	0.000	73.000	65.000	87.000	84.000	89.000	74.000
88.000	0.000	94.000	86.000	88.000	83.000	0.000	91.000
89.000							

****
APPEALOFSEN.
7
SUSSENT.
0
*
0.000 0.000 0.000 0.000 3.000 0.000 1.000 1.000
0.000 0.000 1.000 1.000 0.000 0.000 0.000 0.000
0.000
DISMISSED
16
*
100.000 67.000 76.000 63.000 74.000 80.000 74.000 64.000
62.000 0.000 67.000 71.000 70.000 86.000 100.000 68.000
71.000
VARIED
16
*
0.000 33.000 24.000 37.000 23.000 20.000 25.000 35.000
38.000 0.000 32.000 28.000 30.000 14.000 0.000 32.000
29.000

STAGE 15

```
****
INSTITUT.
13
PRPRIV.
  0
*
    8.000   27.000   28.000   27.000   17.500    5.600    3.400   32.000
   12.000    0.000    4.300    5.600    7.700    2.400    0.000    4.300
    6.000
PRPUB.
  0
12
   11.000    9.000   11.000   14.000   11.800    1.600    2.200    9.000
    5.500    0.000    2.100    2.200    3.700    2.400    0.000    2.200
    2.200
PRPARSERV.
  0
12
   78.000   64.000   56.000   59.000   24.200   10.500    9.200   57.300
   22.300    0.000    8.600   12.800   16.000    4.900    0.000    7.700
   13.200
PROTHER
  0
*
    0.000    0.000    3.000    0.000    0.300    0.800    0.200    0.000
    0.300    0.000    0.100    0.000    0.300    0.000    0.000    0.300
    0.100
PRNOSUPER.
  0
*
    3.000    0.000    2.000    0.000    0.700    0.000    0.700    2.000
    0.500    0.000    0.300    0.800    0.900    4.900    0.000    1.800
    1.000
IND.RELEASE
  0
*
    0.000    0.000    0.000    0.000   45.000   81.500   84.300    0.000
   59.300    0.000   84.600   78.600   71.400   85.400  100.000   84.600
   77.500
```

****
CONVICTEDS
*
FINED
0
*
0.000 0.000 0.000 0.000 0.000 0.000 63.000 0.000
0.000 38.000 0.000 0.000 48.000 89.000 99.400 65.000
62.000
SUSPSEN.
0
*
0.000 0.000 0.000 0.000 0.000 0.000 15.000 3.000
0.000 9.000 0.000 0.000 9.000 5.000 0.200 9.000
12.000
OTHER
0
*
0.000 0.000 0.000 0.000 0.000 0.000 2.000 0.000
0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000
1.000
INST.
18
*
0.000 0.000 0.000 0.000 0.000 0.000 9.000 0.000
0.000 19.000 0.000 0.000 34.000 19.000 0.200 14.000
16.000
SUSPENPROB.
0
11
0.000 0.000 0.000 0.000 0.000 0.000 11.000 0.000
0.000 34.000 0.000 0.000 9.000 5.000 0.200 12.000
9.000
****
SUMMINST.
*
APPOFCON.
19
*
0.000 0.000 0.000 0.000 0.000 0.000 6.000 0.000
0.000 0.300 0.000 0.000 1.000 100.000 0.000 7.000
3.000
NOAPPOFCON.
20
*
0.000 0.000 0.000 0.000 0.000 0.000 94.000 0.000
0.000 99.700 0.000 0.000 99.000 0.000 100.000 93.000
97.000

STAGE 17

STAGE 18

****
CONAPPEAL
5
NEW TRIAL
0
*
0.000 0.000 0.000 0.000 0.000 0.000 2.000 0.000
0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000
5.000
SUBSTVERD.
20
*
0.000 0.000 0.000 0.000 0.000 0.000 8.000 0.000
0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000
0.000
DISMISSED
20
*
0.000 0.000 0.000 0.000 0.000 0.000 45.000 0.000
0.000 0.000 0.000 0.000 100.000 100.000 0.000 73.000
68.000
ACQUITTED
0
*
0.000 0.000 0.000 0.000 0.000 0.000 45.000 0.000
0.000 100.000 0.000 0.000 0.000 0.000 0.000 27.000
27.000
****
CONUPHELD
STAGE 20
*
APPEALOFSEN.
21
*
0.000 0.000 0.000 0.000 0.000 0.000 2.000 0.000
0.000 0.000 0.000 0.000 0.000 0.000 0.000 1.000
2.000
NO APPEAL
22
*
0.000 0.000 0.000 0.000 0.000 0.000 98.000 0.000
0.000 100.000 0.000 0.000 100.000 100.000 100.000 99.000
98.000

****
APPSENTENCE
5
SUSPSENTENCE
0
*
0.000 0.000 0.000 0.000 0.000 0.000 14.000 0.000
0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000
3.000
DISMISSED
22
*
0.000 0.000 0.000 0.000 0.000 0.000 7.000 0.000
0.000 0.000 0.000 0.000 0.000 0.000 0.000 100.000
34.000
VARIED
22
*
0.000 0.000 0.000 0.000 0.000 0.000 79.000 0.000
0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000
63.000
****

STAGE 21

SINSTITUTION
10
S.RELEASE
0
*
0.000 0.000 0.000 0.000 0.000 0.000 100.00 0.000
0.000 100.000 0.000 0.000 100.000 100.000 100.000 100.000
100.000

STAGE 22

****
APPINCOURT STAGE 23
14,15
DISMISSED
0
*
0.000 0.000 0.000 15.000 6.000 0.000 10.000 5.000
2.000 4.000 3.000 5.000 1.000 12.000 33.000 4.000
6.000
ADJOURNED
0
*
0.000 100.000 0.000 8.000 26.000 31.000 25.000 38.000
21.000 17.000 25.000 26.000 20.000 44.000 59.000 35.000
23.000
FDELINQUENT
24
*
100.000 0.000 100.000 77.000 68.000 69.000 65.000 57.000
77.000 79.000 72.000 69.000 79.000 44.000 8.000 61.000
71.000
****
FOUNDDELINK. STAGE 24
*
REPRIMAND
0
*
0.000 0.000 0.000 0.000 1.000 0.000 2.000 1.000
1.000 1.000 2.000 2.000 2.000 14.000 0.000 3.000
2.000
DETENTION
0
17
40.000 00.000 0.000 20.000 1.000 18.000 3.000 4.000
2.000 1.000 1.000 2.000 1.500 0.000 0.000 0.000
0.500
REPATRIATED
0

```
*
    0.000     0.000     0.000     0.000     1.000     0.000     1.000     0.000
    0.600     0.000     0.400     0.200     0.500     0.000     0.000     0.000
    3.000
PROBATION
  0
16
    0.000     0.000    50.000    30.000    66.000    64.000    53.000    51.000
   60.000    45.000    52.000    72.000    57.000    72.000     0.000    28.000
   38.000
TRANSFERRED
  0
*
    0.000     0.000     0.000    20.000     1.000     0.000     2.000     3.000
    1.200     1.000     0.500     0.800     2.000     0.000     0.000     1.000
    0.400
FINED
  0
*
    0.000     0.000     0.000    10.000     8.000     0.000    15.000     0.000
    6.000    14.000    10.000     8.000    13.000    14.000   100.000    23.000
   30.000
TRAINSCHOOL
  0
*
   60.000     0.000    50.000    10.000     8.000     0.000     5.000    11.000
    8.000     8.000     5.000     8.000     5.000     0.000     0.000    11.000
    6.000
MENT HOSP.
  0
*
    0.000     0.000     0.000     0.000     1.000     0.000     1.000     0.000
    0.200     0.000     0.100     0.000     0.000     0.000     0.000     0.000
    0.100
SUSPENDSEN.
  0
*
    0.000     0.000     0.000    10.000    13.000    18.000    18.000    21.000
   21.000    30.000    29.000     7.000    19.000     0.000     0.000    34.000
   20.000
****
```

```
****
DETECTIVE    HOUR                    RESOURCE  1
7.79,1700,0
PATROLMAN    HOUR                    RESOURCE  2
7.18,1700,0
MAGISTRATE   HOUR                    RESOURCE  3
35.93,542,0
JUDGE        DAY                     RESOURCE  4
860.0,211,0
DA PROS      DAY                     RESOURCE  5
100.0,211,0
DA INDICT    HOUR                    RESOURCE  6
13.11,1610,0
PROBATION    YEAR                    RESOURCE  7
60.0,35,0
PAROLE       YEAR                    RESOURCE  8
480.0,35,0
INSTITUTION  YEAR                    RESOURCE  9
4438.0,1,0
JAIL         DAY                     RESOURCE 10
7.0,265,0
JUV JUDGE    DAY                     RESOURCE 11
480.2,211,0
JUV PROS     DAY                     RESOURCE 12
76.37,115,0
JUV PROBAT   YEAR                    RESOURCE 13
231.68,35,0
JUV INST     YEAR                    RESOURCE 14
9621.4,1,0
****
DECT REPORT  HOUR                    WORKLOAD  1
  1
   15.100     0.000     0.000     2.100     0.000     2.000     0.000     0.000
    1.300     0.000     2.300     0.000     0.000     0.000     0.300     0.000
    0.000
PATROL RPT.  HOUR                    WORKLOAD  2
  2
    2.000     0.000     0.000     1.200     0.000     0.600     0.000     0.000
    0.900     0.700     0.600     0.000     0.000     0.000     0.000     0.000
    0.000
```

DECT ARREST HOUR WORKLOAD 3
1
28.400 0.000 28.400 14.800 15.000 6.100 0.000 12.000
10.000 8.200 18.600 10.000 10.000 15.000 15.000 0.000
0.000
PATROL ARR. HOUR WORKLOAD 4
2
0.000 1.500 0.000 0.000 0.000 0.000 1.500 0.000
0.000 0.000 0.000 0.000 0.000 0.000 0.000 1.400
1.400
MAG SUM HEARHOUR WORKLOAD 5
3
2.000 0.150 1.000 0.350 0.220 0.240 0.150 0.240
0.220 0.140 0.150 0.170 0.180 0.210 0.150 0.160
0.155
MAG ARRAIGN HOUR WORKLOAD 6
3
0.210 0.150 0.210 0.210 0.150 0.210 0.150 0.210
0.210 0.210 0.210 0.150 0.150 0.150 0.150 0.150
0.150
JUD BENCH TRDAY WORKLOAD 7
4
0.870 0.170 0.870 0.640 0.170 0.640 0.170 0.870
0.640 0.640 0.640 0.170 0.640 0.130 0.130 0.130
0.120
DA BENCH TR DAY WORKLOAD 8
5
1.900 0.380 1.900 1.440 0.380 1.440 0.380 1.440
1.440 1.440 1.440 0.380 0.860 0.290 0.290 0.290
1.070
DA IND PREP HOUR WORKLOAD 9
6
2.260 0.540 1.130 1.130 0.540 1.130 0.540 1.320
1.320 1.320 1.320 0.540 3.000 0.620 0.540 0.540
0.640
JAIL SUMOFF DAY WORKLOAD 10
10
0.000 14.000 0.000 0.000 12.000 0.000 14.000 0.000
0.000 0.000 16.000 16.000 12.000 12.000 0.000 10.000
11.000

PROBATION YEAR WORKLOAD 11
7
2.500 1.290 2.060 2.900 1.770 2.470 1.290 3.860
2.900 2.000 2.240 2.110 2.300 1.190 0.962 1.340
1.777
PAROLE YEAR WORKLOAD 12
8
1.420 0.862 1.150 0.333 0.565 0.973 0.862 1.210
1.030 1.070 0.967 1.000 1.030 0.292 0.083 0.555
0.522
INSTITUTION YEAR WORKLOAD 13
9
2.500 0.276 2.500 1.200 1.500 0.527 0.276 1.845
0.762 0.250 0.762 1.022 0.485 0.903 1.000 1.500
0.343
JUV JUDGE DAY WORKLOAD 14
11
0.120 0.120 0.120 0.120 0.120 0.120 0.120 0.120
0.120 0.120 0.120 0.120 0.120 0.120 0.120 0.120
0.120
JUV PROS DAY WORKLOAD 15
12
1.780 1.780 1.780 1.780 1.780 1.780 1.780 1.780
1.780 1.780 1.780 1.780 1.780 1.780 1.780 1.780
1.780
JUV PROB YEAR WORKLOAD 16
13
0.700 0.700 0.700 0.700 0.700 0.700 0.700 0.700
0.700 0.700 0.700 0.700 0.700 0.700 0.700 0.700
0.700
JUV INSTIT YEAR WORKLOAD 17
14
0.750 0.750 0.750 0.750 0.750 0.750 0.750 0.750
0.750 0.750 0.750 0.750 0.750 0.750 0.750 0.750
0.750
DA JURY TR. DAY WORKLOAD 18
6
3.350 0.720 3.350 2.460 0.720 1.260 0.720 2.460
2.460 2.460 2.460 0.720 1.620 0.550 0.550 0.550
0.550
JUD JURY TR DAY WORKLOAD 19
4
2.260 0.510 2.260 1.160 0.510 0.780 0.510 1.660
1.660 1.660 1.660 0.510 1.140 0.390 0.390 0.390
0.360

```
****
POLICE                                          SUBSYSTEM 1
PATROLMAN    HOUR
2,4
DETECTIVE    HOUR
1,3
****
COURT                                           SUBSYSTEM 2
JUDGE        DAY
7,14,19
MAGISTRATE   HOUR
5,6
PROSECUTOR   DAY
8,-9,15,18
****
CORRECTIONS                                     SUBSYSTEM 3
DETENTION    YEAR
-10,13,17
PAROLE       YEAR
12
PROBATION    YEAR
11,16
****
TOTAL SYSTEM                                    SUBSYSTEM 4
POLICE       HOUR
1,2,3,4
COURT        DAY
-5,-6,7,8,-9,14,15,18,19
CORRECTIONS  YEAR
-10,11,12,13,16,17
****
****
4
*
*
****
  1
  212.000  133.000   79.000  911.000 5873.000 1318.00059219.000 8010.000
133011.0046835.000321574.00 8607.00026258.000 1082.000 1428.000 4607.000
188441.00
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LIST OF REPORTS

STATISTICS DIVISION Working Papers	TITLE	CANJUS PROJECT REPORTS
1/73	Organization of the Statistics Division Volume I	
2/73	A Preliminary Description of the Canadian Criminal Justice System Volume I	
3/73	Organization of Quantitative Approaches to the Canadian Criminal	
4/73	A Preliminary Description of the Canadian Criminal Justice System Volume II	#1
5/73	Use of the CANJUS Model for Planning and Evaluation in the Canadian Criminal Justice System	#2
6/73	Data Incompatibilities for Penitentiary Admissions and Parole Violations	#3
7/73	Information Systems Report on Canadian Criminal Justice System Costs: Problems and Recommendations	#4

STATISTICS DIVISION Working Papers	TITLE	CANJUS PROJECT REPORTS
8/73	Prediction of Penitentiary Population Volume I	#5
9/73	Information Systems Report on Workloads in the Canadian Criminal Justice System: Problems, Recommendations and Directions for Future Development	#6
10/73	The CANJUS Input Identity System	#7
11/73	Parole Expenditures and Workloads in Canada	#8