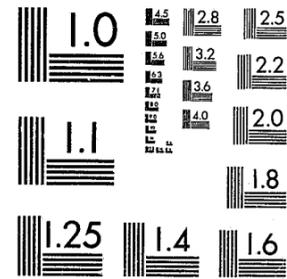


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U.S. Department of Justice



**Minnesota Sentencing Guidelines  
Population Projection Program  
User's Manual**

U.S. Department of Justice  
National Institute of Justice

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**February 1981**

**MINNESOTA SENTENCING GUIDELINES  
POPULATION PROJECTION PROGRAM  
USER'S MANUAL**

February 1981

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MINNESOTA SENTENCING GUIDELINES POPULATION PROJECTION PROGRAM  
USER'S MANUAL

I  
INTRODUCTION

Prison populations are rising throughout the nation. Population increases are effecting severe overcrowding in many correctional systems and have caused numerous federal suits to be filed against corrections systems charging that the civil rights of inmates are being violated by conditions of their confinement.

The most common policy response to the rise in prison populations and the resulting inhumane conditions of confinement has been to build more prisons--at a construction cost ranging from approximately \$30,000 to \$80,000 per cell. Prison population projections for a ten to twenty year period are generally used to help determine the number of additional cells needed to handle prison populations. The assumptions built into most population projections used for this type of planning are that: 1) current sentencing and releasing policies and practices will remain unchanged during the projected time frame; and 2) a major element causing variation in prison populations are demographic changes in the general population. Prison populations from this perspective tend to be viewed as inevitable natural phenomena rather than the product of criminal justice policy emanating from law enforcement, prosecution, the judiciary, and corrections.

An alternative to building more prisons in response to the problem of rising prison populations is to establish sentencing policies that would effect a more rational use of existing capacity. This approach establishes prison capacity and prison population levels as a policy choice to be made by criminal justice decision makers. Subsequently, criminal justice policy is developed which determines the most appropriate use of that limited space. This perspective incorporates the recognition that resources--existing prison cells and money to construct and operate additional cells--are scarce and must be allocated rationally.

Prison population projections can be a useful planning tool for developing policy to control prison populations. Rather than using projected populations in the usual manner, i.e., to help determine the number of additional cells to build, the projected populations are used to identify criminal justice policies that are feasible and those

## II MSG PROJECTION MODEL

### General Description

The primary determinants of a future prison population are: 1) the current or base prison population; 2) new commitments added to the prison population between the present and future dates; and 3) the durations of imprisonment for offenders in the current prison population and for new commitments. Administrative factors that affect prison populations include technical revocations of parole or supervised release, modifications of imprisonment durations due to policies such as use of work release or other early release programs, crediting of jail time served during court processing, and good time accrual. The flowchart in Figure 1 depicts the processing of convicted offenders in the Minnesota criminal justice system. That process ultimately determines future prison populations and it provides the conceptual basis for the MSG projection model.

The flow structure of the system depicted in Figure 1 is not unusually complicated, but the projection model is complex. The projections generated by the MSG projection model are based on micro level data, i.e., data on individual cases. Movement through the system is generated by probabilities, and the lengths of time spent at each processing point are adjustable parameters in the model. For example, an offender convicted of aggravated robbery with no prior criminal history can be assigned a .80 probability of being sentenced to prison and .20 probability of receiving a stayed or suspended sentence. That case is fractionated into two parts, .80 of the case (including personal characteristics such as sex, race, and age) which is routed through the prison or left side of the system, and .20 which is routed through the probation or right side of the system. Further probabilities are specified throughout the process including the granting of work release, the revocation of work release, revocation of parole or supervised release, and the probability of probation revocation. The length of time spent at each status point is specified either in the data or projection parameter. Events and the timing of events are modeled by the MSG projection program, and individual characteristics such as the sex, race, and age of offender associated with a case are maintained throughout the system with the fractions aggregated at various outcome points.

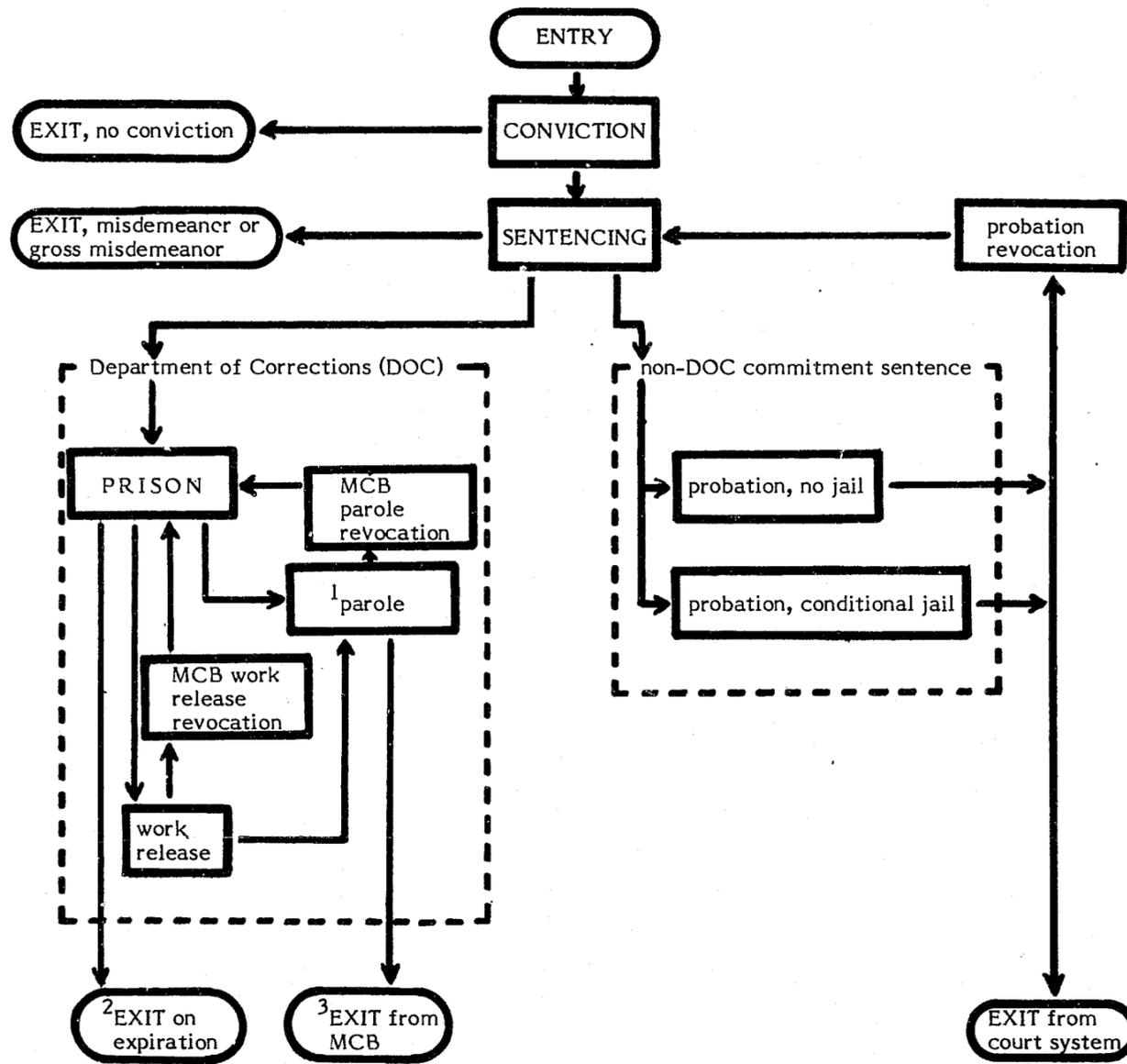
The categorization of offenders and offenses is central to the operation of the MSG projection program. Sentencing policy virtually always differentiates among types of

that are not feasible given the established prison capacity. The major assumption of a projection model used as a planning tool for developing criminal justice policy is that the primary determinants of prison populations are factors controlled by criminal justice officials, namely the number of offenders sent to prison and the duration of confinement of those imprisoned. Demographic impact on prison populations tends to be deemphasized in this approach. It is assumed that demographic and environmental factors which affect prison populations are funneled through the criminal justice system, and the response of the criminal justice system to those factors determines their effect on prison populations.

The Minnesota Sentencing Guidelines (MSG) population projection model, developed with a \$12,700 grant from the National Institute of Corrections, is designed to test the effect of sentencing policies on prison populations by producing prison population projections for a five year time frame. Inherent in the development and use of the MSG model is the perspective that prison populations are determined by those who make and implement criminal justice policy. While it is possible to use the MSG model to merely project the continuation of current sentencing and releasing practices on prison populations, the power of the MSG projection model lies in its ability to test the impact of various sentencing policies on prison populations.

The MSG projection model user's manual provides a general discussion of the MSG projection model and a more specific description of how to use the population projection. The manual is primarily geared for users who possess some, but not necessarily extensive, experience with social science methodology and software. Appendix I describes the program structure and subroutines. Appendix II outlines techniques for adapting the program for different applications, and Appendix III illustrates output from the program.

**Figure 1**  
Systems Flowchart of Sentencing and Releasing Processes  
in the Minnesota Criminal Justice System



<sup>1</sup> "Parole" to be renamed supervised release under sentencing guidelines.  
<sup>2</sup> Under sentencing guidelines, virtually no one will exit prison on expiration of sentence.  
<sup>3</sup> Under sentencing guidelines, exit from supervised release will occur at expiration of sentence.

offenders or offenses with sanctions proportional to seriousness of offender or offense. Many criminal codes differentiate offenses into four or five levels or classes according to offense seriousness and severity of proposed sanction, and criminal codes often establish specific sanctions for habitual or repetitive offenders. The MSG projection program provides for two dimensions for categorizing offenders, with a maximum of ten levels for each dimension, i.e., a maximum of 100 categories.

The two most common factors used in establishing policy for sanctions are severity of current offense and criminal and/or social history of the offender. The Minnesota Sentencing Guidelines Commission, for example, determined that severity of the current conviction offense and criminal history of the offender were the most important factors in establishing sanctions, and that appropriate sanctions should be proportional to combinations of those two factors. Criminal offenses were divided into ten severity levels by the Commission and became the vertical dimension of the two-dimensional grid shown in Figure 2. The horizontal dimension of the sentencing guidelines grid displays a seven-category criminal history index, resulting in a 10 by 7 grid. While severity of the current conviction and criminal history of the defendant are the most common factors used in establishing sanctions, the dimensions defined by the MSG projection program are substantively neutral and can be used to represent any factors deemed relevant by the user. Offenders can be categorized according to one dimension (e.g., 10 by 1 grid) or two dimensions (e.g., 10 by 10 grid). The total number of categories or differentiations can vary between 1 and 100.

The MSG projection program provides for assigning probabilities of imprisonment to cases in each category defined by the user. For example, the final structure of the Minnesota Sentencing Guidelines portrayed in Figure 2 contains seventy cells, each of which defines a particular combination of offense severity and offender criminal history. The heavy black line running across the grid represents the dispositional policy of the Commission. The presumptive disposition for cases falling above the line is a stayed or probationary sentence. The presumptive disposition for cases falling below the line is imprisonment. An exact implementation of that policy would result in imprisonment probabilities of 0.00 for all cases in categories falling above the line and 1.00 for all cases in categories falling below the line.

A pure implementation of policy that is represented by imprisonment probabilities of 0.00 and 1.00 is generally not intended nor deemed desirable. Except for instances of legislatively defined mandatory sentences, some discretion is generally provided to the court in the decision as to whether to imprison an offender. In the case of the

**Figure 2**  
Sentencing Guidelines Grid

Presumptive Sentence Lengths in Months

Italicized numbers within the grid denote the range within which a judge may sentence without the sentence being deemed a departure.

SEVERITY LEVELS OF CONVICTION OFFENSE	CRIMINAL HISTORY SCORE						
	0	1	2	3	4	5	6 or more
<i>Unauthorized Use of Motor Vehicle</i> <i>Possession of Marijuana</i> I	12*	12*	12*	15	18	21	24
<i>Theft Related Crimes (\$150-\$2500)</i> <i>Sale of Marijuana</i> II	12*	12*	14	17	20	23	27 25-29
<i>Theft Crimes (\$150-\$2500)</i> III	12*	13	16	19	22 21-23	27 25-29	32 30-34
<i>Burglary - Felony Intent</i> <i>Receiving Stolen Goods (\$150-\$2500)</i> IV	12*	15	18	21	25 24-26	32 30-34	41 37-45
<i>Simple Robbery</i> V	18	23	27	30 29-31	38 36-40	46 43-49	54 50-58
<i>Assault, 2nd Degree</i> VI	21	26	30	34 33-35	44 42-46	54 50-58	65 60-70
<i>Aggravated Robbery</i> VII	24 23-25	32 30-34	41 38-44	49 45-53	65 60-70	81 75-87	97 90-104
<i>Assault, 1st Degree</i> <i>Criminal Sexual Conduct, 1st Degree</i> VIII	43 41-45	54 50-58	65 60-70	76 71-81	95 89-101	113 106-120	132 124-140
<i>Murder, 3rd Degree</i> IX	97 94-100	119 116-122	127 124-130	149 143-155	176 168-184	205 195-215	230 218-242
<i>Murder, 2nd Degree</i> X	116 111-121	140 133-147	162 153-171	203 192-214	243 231-255	284 270-298	324 309-339

1st Degree Murder is excluded from the guidelines by law and continues to have a mandatory life sentence.

\*one year and one day

Minnesota sentencing policy, judges may depart from the guidelines when substantial and compelling circumstances exist in which case the judge must provide written reasons which specify the substantial and compelling nature of the circumstances and which demonstrate why the sentence selected in the departure is more appropriate, reasonable, or equitable than the presumptive sentence. Given the ability to depart, more realistic assignment of probabilities of imprisonment than a 0.00 and 1.00 assignment for the sentencing policy articulated in Figure 2 might be that shown in Figure 3a. The distribution of probabilities in Figure 3a represents an overall departure rate of 10%. The majority of cases fall in the upper left-hand corner of the grid where the probability of imprisonment is assumed to be fairly low and, therefore, the overall departure rate remains relatively low even though a relatively high departure rate is assumed for cells proximate to the line. The distribution of probabilities in Figure 3b represents an overall departure rate of approximately 7%.

The dispositional policy established by the Minnesota Sentencing Guidelines Commission provides a fairly explicit guide for the assignment of imprisonment probabilities. The determinate sentencing proposals that have been considered by legislatures over the past decade have generally not provided much guidance for the dispositional decision, but rather have focused on the length of sentence for those who are imprisoned. Without fairly explicit sentencing policy concerning the crucial component of how many and what kinds of offenders should be imprisoned, probabilities of imprisonment will be more difficult to estimate and the impact of the sentencing proposal on prison populations will be relatively uncertain.

Data Requirements

An array of imprisonment probabilities which conforms to the dispositional policy under consideration is one of the key data elements required by the MSG projection program. A probability file containing the imprisonment probabilities is one of four data files needed to operate the population projection. Two other grids are maintained in the probability file, one establishing the probabilities of an offender receiving a misdemeanor or gross misdemeanor sentence instead of a felony sentence, and the other establishing the probabilities of a probation revocation. A base file is a second data file and essentially contains a snapshot of the current population and the release dates for offenders currently imprisoned. The primary data file is the micro data file which contains information on individual offenders convicted over a year's period. As noted above, the projections generated by the MSG projection program are based on micro level data. The probabilities of imprisonment that are assigned to categories of

**Figure 3**  
Imprisonment Probabilities

**3a. Probability of Imprisonment**  
10% departure rate for the F.Y. 1978  
distribution of offenders in Minnesota

.010	.050	.150	.200	.200	.200	.300
.020	.050	.150	.250	.300	.300	.900
.030	.050	.150	.250	.800	.800	.900
.100	.100	.200	.300	.800	.900	.900
.100	.200	.300	.800	.900	.900	.900
.200	.200	.300	.800	.900	.900	1.00
.800	.800	.800	.900	1.00	1.00	1.00
.900	.900	.900	.900	1.00	1.00	1.00
.900	1.00	1.00	1.00	1.00	1.00	1.00
1.00	1.00	1.00	1.00	1.00	1.00	1.00

**3b. Probability of Imprisonment**  
7% departure rate for the F.Y. 1978  
distribution of offenders in Minnesota

.010	.020	.030	.050	.100	.100	.200
.020	.030	.050	.100	.200	.200	.900
.030	.050	.100	.200	.900	.900	.900
.050	.100	.100	.200	.900	.900	.900
.100	.100	.200	.900	.900	.900	.900
.200	.200	.200	.900	.900	.900	1.00
.900	.900	.900	.900	1.00	1.00	1.00
.900	.900	.900	.900	1.00	1.00	1.00
.900	1.00	1.00	1.00	1.00	1.00	1.00
1.00	1.00	1.00	1.00	1.00	1.00	1.00

offenders defined by the user are in turn assigned by the MSG projection program to the individual cases which fall in the categories. The data elements included in the micro data file used for the development of the Minnesota Sentencing Guidelines are the offender's severity level and the history score (which define the individual's category or cell), race, age, sex, judicial district, eligibility for consecutive sentencing, offense type, month of sentencing, case weight, and duration of imprisonment. A labels file defines the number of categories and labels of the variables in the micro data file so that the specific data elements and format contained in the micro data file can be specified by the user. Each case in the micro data file is reentered into the projection system during its month of sentencing for five consecutive years, providing a five year projected data set. An estimate of the increase or decrease of the population at risk for each of the five years is an adjustable parameter of the model, with each case weighted annually by that factor. A fourth data file, an adjustment file, contains a grid conforming to the sentencing structure under consideration that can be used to modify (either increase or decrease) by category the duration of imprisonment established in the micro data file.

In addition to the four data files, several parameters describing corrections and parole board practices are maintained in the projection program and can be adjusted each time the program is run. The major parameters are the probability of work release, the probability of revocation of work release, the probability of parole/supervised release revocation, the average length of work release, average institutional time following work release revocation, average length of parole/supervised release before revocation, average institutional time following parole/supervised release revocation, and average length of probation before revocation.

**Program Output**

The MSG projection model provides extensive information concerning the impact of sentencing policy in two areas: 1) prison populations for a five year period, and 2) the elements of the process which generate the projected prison populations, including a delineation by month of new court commitments, probation revocations, parole/supervised release revocations, and releases from prison. While the most essential information from the population projection for the development of sentencing policy is projected prison populations, knowledge concerning the underlying process from which projected prison populations occur can be valuable in evaluating various sentencing proposals and in providing a more adequate basis for comparison among alternatives.

The annual prison population projections can be broken down by a number of factors deemed to have relevance for corrections and the criminal justice system such as sex, race, age, judicial district, offense type, and length of imprisonment--i.e., factors defined in the micro data file. Process information can be obtained for the total population as well as broken down by race and sex.

The demographic and offense breakdowns provide the capability of projecting the nature of the prison population in addition to its size. The nature of the prison population has substantial implications for correctional programming and management as well as providing further means for evaluating the impact of various sentencing alternatives. For example, the age distribution of offenders could indicate the need for educational programming relative to work programming. The population breakdown by sex is clearly important information for correctional management purposes since most prisons are single gender institutions.

### III USING THE MSG POPULATION PROJECTION PROGRAM

The MSG population projection program is written in Fortran IV for a Control Data Corporation Cyber 172 computer system. The program is nearly 2,000 lines in length and is structured into approximately 25 procedures or subroutines described in Appendix I. The purpose of the program is to produce five year prison population projections, allowing a variety of parameter settings and input conditions. In addition, population estimates can be broken down for several demographic factors. The four data files and other data parameters required by the program are described in the next section, followed by instructions for using the program and descriptions and examples of the population projection output.

#### Data Files and Data Parameters

**Probability File:** Three probability grids are contained in the probability file shown in Figure 4. The probability grids can either be derived empirically, i.e., based on estimates of past practice, or developed theoretically by creating assumptions about behavior under a new sentencing policy, or a combination of the two approaches. The method chosen will depend upon the user's purposes. The first of the grids displays the probabilities by cell of an offender who is convicted of a felony offense receiving a non-felony (i.e., misdemeanor/non-imprisonment type) sentence. The Minnesota criminal code defines the ultimate classification of an offense by the sentence imposed by the judge rather than by the statutory definition of the offense. Thus, if a judge imposes a 90 day sentence (i.e., misdemeanor sentence) for a felony assault conviction, the offense is deemed a misdemeanor rather than a felony. The significance of an initial non-felony sentence in terms of the prison population projection program is that an offender (or fraction of a case) that receives an initial non-felony sentence is ineligible for later imprisonment via probation revocation for technical violation, i.e., the case fraction is not routed through the right side of the criminal justice model as shown in Figure 1. The structure of the probability grids conforms to the structure of the categories defined by the sentencing policy under consideration with rows representing categories of the first dimension and columns representing categories of the second dimension. The structure of the grid, i.e., number of rows and columns, is defined by parameters specified in the first line of the adjustment file (see discussion below and Figure 7) and can be varied with each run of the program by 1) changing the parameters of the first line of the adjustment file, 2) changing the structure of the probability grids, and 3) changing the row and column variables in the micro data set.

Figure 4  
Probability File

.116	.074	.091	.190	.000	.120	.000
.096	.160	.023	.000	.000	.055	.000
.105	.084	.144	.052	.181	.135	.047
.044	.033	.030	.000	.000	.000	.000
.035	.000	.000	.000	.000	.000	.000
.032	.013	.073	.140	.000	.000	.000
.044	.037	.000	.000	.000	.000	.000
.000	.084	.000	.000	.000	.000	.000
.000	.000	.000	.000	.000	.000	.000
.000	.000	.000	.000	.000	.000	.000

.010	.050	.150	.200	.200	.200	.300
.020	.050	.150	.250	.300	.300	.900
.030	.050	.150	.250	.800	.800	.900
.100	.100	.200	.300	.800	.900	.900
.100	.200	.300	.800	.900	.900	.900
.200	.200	.300	.800	.900	.900	1.00
.800	.800	.800	.900	1.00	1.00	1.00
.900	.900	.900	.900	1.00	1.00	1.00
.900	1.00	1.00	1.00	1.00	1.00	1.00
1.00	1.00	1.00	1.00	1.00	1.00	1.00

.039	.088	.062	.000	.000	.000	.000
.017	.000	.000	.077	.000	.000	.000
.011	.016	.076	.000	.399	.000	.000
.039	.043	.054	.226	.000	.000	.000
.025	.101	.000	.000	.000	.000	.000
.037	.072	.153	.000	.508	.000	.000
.040	.000	.000	.000	.000	.000	.000
.082	.000	.000	.000	.000	.000	.000
.000	.000	.000	.000	.000	.000	.000
.000	.000	.000	.000	.000	.000	.000

The second grid in the probability file displays the probabilities by cell of an offender receiving an initial commitment to prison. This grid represents one of the most significant components in determining the prison population estimates. Various dispositional policies for a given grid can be tested simply by varying the imprisonment probability grid, which provides considerable flexibility for testing sentencing policies.

The third grid in the probability file establishes the probabilities by cell of probation revocation resulting from technical violations. Unlike the two previous probability grids discussed which contain probabilities based on the entire felony population, the probation revocation probabilities are based on all felony offenders minus the number that are expected to receive initial non-felony sentences. For example, given an estimated annual population of 10,000 convicted felons with approximately 1,000 of them receiving an initial non-felony sentence, the bases on which to establish the probability grids are 10,000 for the non-felony and imprisonment grids and 9,000 for the probation revocation grid. The grids can represent substantive factors other than non-felony and probation revocations, but the relationship between the two grids should be recognized if the user wishes to represent other phenomena. Given that the population projection models the timing of events as well as the events themselves, an average estimate of when eventual probation revocations will occur must be specified in the parameter list (see pages 20-22).

An entry is required in each cell of the probability grid, and a decimal point should be entered with each probability, e.g., .41 or 1.00. If building in probabilities for new felony sentences or probation revocations is deemed to be unnecessary, that can be accomplished by placing 0.00 in all grid cells. The format for the grids are free field, requiring a comma or blank space to distinguish each cell value. Six blank lines separate each probability grid. The grids contained in the probability file are printed out at the beginning of the projection output with each execution of the program.

**Base File:** The base file (see Figure 5) contains six tables which provide a snapshot of the existing prison population. The tables show the numbers of offenders to be released each month for 61 months (five years plus one month) with the 61 months represented as the column variable. The 61st month includes those scheduled for release in the 61st month or any later month. The rows in each table represent levels of given demographic variables with tables ranging in size from 2 by 61 to 10 by 61. The demographic order of the tables and the categories of the demographic variables



correspond to the order and categorization of demographic breakdowns reported in the output as follows:

- |                               |                                      |
|-------------------------------|--------------------------------------|
| 1. Sex (2 categories)         | 4. Offense Type (8 categories)       |
| 2. Race (5 categories)        | 5. Sentence Length (6 categories)    |
| 3. Current Age (6 categories) | 6. Judicial District (10 categories) |

Ten is the maximum number of categories allowed for any of the demographic variables. The number of categories and labels for the tables can be modified by adjusting the labels file and making internal program adjustments (see Appendix II).

The data format for the tables is (20I3/20I3/21I3) so that the lines in the first base table are interpreted as follows:

- 1st line: male releases for months 1 through 20
- 2nd line: male releases for months 21 through 40
- 3rd line: male releases for months 41 through 61
- 4th line: female releases for months 1 through 20
- 5th line: female releases for months 21 through 40
- 6th line: female releases for months 41 through 61

Modification of the input format for the base tables is described in Appendix II. There are six blank lines or records between each set of tables to increase readability.

The total base population count is computed in the program by adding across rows in the first table, which is the breakdown by sex. This table is used to determine the base population because it is the variable for which there is generally the least missing data. The tables need not all sum to the same base since there will likely be varying levels of missing data for the variables. The breakdowns by demographic variables in the output also sum to different totals, but the percentage tables for each demographic variable are based on the total for that table, i.e., missing data is excluded.

**Micro Data File:** This data file contains information on individual offenders and is used by the program to estimate a year's felony population. If a sample of felony cases is used, case weights will be used by the program to create an estimated annual population of offenders. For example, in the original application of the population projection, a sample of 2,339 cases was used for the projection data, which represented approximately 50% of all felony convictions. Case weights derived from the sample design were used to create an annual hypothetical population of 4,388. If sufficient individual level data is available for the entire felony population, the case weight will be 1.0 for all cases.

The program is designed to read eleven variables from the projection data file according to the format:

(4X, F1, F2, 2F1, 2F2, F1, F3, F1, F3, F3.2)

The first four columns of the data records can be used for case identification—the columns are not read by the population projection program, but it is useful for data management purposes to include case identifiers in the data set. If a longer case identifier is required than is possible with four digits, the format for the data set can be changed following the procedures outlined in Appendix II, or the case identifier can be placed at the end of each record.

The variables in the order they appear in the data file are as follows:

- Sex (2 categories)
- Age at Sentence (continuous variable in the data set; the variable is categorized into six values by the program)
- Race (5 categories)
- Offense Type (8 categories)
- District (10 categories)
- Category of Row or Vertical Dimension of Grid (10 categories)
- Category or Column of Horizontal Dimension of Grid (7 categories)
- Length of Imprisonment in Months (continuous variable)
- Occurrence of Consecutive Sentences (2 categories)
- Month of Sentencing (12 categories)
- Case Weight (continuous variable)

An illustrative listing of cases in this file which include a four digit case identification number at the beginning of each record is shown in Figure 6.

Like the categorization described for the base file, the maximum number of categories for all of the variables in the micro data file, with the exception of sentence lengths, month of sentence, and case weight, is ten categories. Modifications of the original category levels can be accomplished by changing the labels file and making internal program adjustments (see Appendix II).

It should be noted that information on terms of imprisonment is contained in the micro data file, with each offender assigned a specific term of imprisonment. It should also be noted that the program treats the durational component as real time imprisonment so that a duration of 24 months would indicate that 24 months would be served — the only exception allowed in the program is early work release which can be established

**Figure 6**  
Micro Data File: Illustrative Listing of Cases

```

110412214 1 20 8012200
110713613 1 40 8012200
110812014 1 10 80 4200
110912316 1 30 80 7200
111013712 1 62 200 7200
111122014 1 30 80 6100
111221914 1 10 80 2100
111322414 1 10 80 8100
120211916 1 11 80 3250
120515816 1 30 80 4250
121022718 1 20 80 7100
121121818 1 20 80 9100
121224118 1 20 8010100
130111811 1 50 12011214
130212014 1 30 80 4214
130311916 1 20 80 4214
130411816 1 10 80 4214
130512616 1 46 270 7214
130612014 1 30 8011214
130713014 1 10 8012214
130811916 1 20 40 5214
130912314 1 20 80 2214
131011816 1 20 8010214
131114113 1 50 120 5214
131212114 1 20 8010214
131411916 1 32 11011214
131512115 1 62 200 3214
131612314 1 21 80 7214
131712314 1 30 80 7214
131812842 1 80 290 7214
131912515 1 61 170 3214
132313132 1 61 170 1214
132412414 1 10 8010214
132511916 1 40 8011214
132611816 1 10 80 4214

```

via the parameter list. The durational component is handled differently than the dispositional component (e.g., assignment of probability of imprisonment by cell), because there are sentencing policies affecting durations that are not related to positions on a grid, at least as formulated in the original application of the population projection program. The two major areas which affect duration for individual cases are the duration for attempted crimes and the situation of multiple current convictions that are sentenced consecutively. Placing information on imprisonment durations in the micro data set allows considerable specificity in assigning durations for special cases. However, because the durations are in the micro data set, there is less flexibility in manipulating and testing the durational component than there is in manipulating the dispositional component. Relatively minor adjustments to a set of durations embodied in the micro data set can be accomplished via an adjustment file and the parameter list (see below); but moderate and major modifications to the durational policies under consideration require the creation of a new micro data set. Major variations in dispositional policies under consideration, on the other hand, can relatively easily be accomplished by merely adjusting the second grid in the probability file.

Missing data for variables in the projection data file should be coded zero. However, every case must have a valid value for the row category of the grid, column category of the grid, length of imprisonment, and case weight. A case with missing data on a demographic variable will result in the exclusion of that case in the demographic breakdown table. The breakdown tables will have variable totals if the amount of missing data varies among the tables. The percentage tables that accompany each breakdown table are based on the total for each table.

**Adjustment File:** As mentioned above, the first line of this file contains the number of rows and columns, respectively, of the sentencing grid under consideration. The dimensions of the grid illustrated by the adjustment file in Figure 7 are 10 by 7.

**Figure 7**  
Adjustment File

```

10 7
.000 .012 .015 .000 .036 .010 .047
.020 .034 .045 .057 .062 .031 .036
.000 .000 .013 .032 .045 .074 .063
.000 .017 .025 .041 .040 .063 .098
.000 .034 .000 .033 .053 .065 .074
.026 .031 .021 .029 .045 .074 .077
.042 .063 .073 .082 .077 .074 .072
.047 .074 .077 .067 .066 .062 .061
.031 .025 .024 .040 .045 .049 .052
.043 .050 .056 .054 .049 .049 .046

```

The remaining values in this file are adjustment factors for the duration component contained in the micro data file. The duration adjustments are assigned on the basis of case location on the grid and, therefore, the values of the adjustment factors are arrayed to conform to the grid being tested with one value for each cell in the grid. Entries are read in free field format. The adjustment factor is multiplicative so that the imprisonment duration for each case is multiplied by the following expression: (1 + adjustment value) with the adjustment value being cell specific. The values of the adjustment grid can be all zeros, in which case no adjustment will be made to the sentence lengths. The adjustment coefficients can be negative, in which case the lengths will be shortened.

**Additional Parameters:** Several demographic and correctional factors which affect prison populations are built into the population projection albeit in a somewhat grosser fashion than the sentencing factors. The parameter list displayed in Figure 8 shows the factors that can be varied with each run. Each of the factors is assigned a default value which is shown in parentheses with every listing of the parameters. The default values can be changed by modifying the program as described in Appendix II.

**Figure 8**  
Parameter List

- 0) NO CHANGES
- 1) RW - REPLICATE MULT. TO CREATE YR POPULATION (= 1.0)
- 2) GROWTH - EST. YEARLY GROWTH RATE (= 1.03, 1.03, .98, .98, .98,)
- 3) NCASES - N OF PROJECTION DATA BASE (= 2339)
- 4) ALWR - AVG. LENGTH WORK RELEASE (= 4.0)
- 5) ALPAR - AVG. LENGTH OF PAROLE BEFORE REVOCATION (= 5.3)
- 6) ALIPAR - AVG. LENGTH OF ADDED SENTENCE FROM PAROLE (= 3.0)
- 7) ALPRR - AVG. LENGTH OF PROBATION BEFORE REVOCATION (= 5.6)
- 8) AAWR - ADDED INSTITUTIONAL TIME AFTER WORK REL REVOKED (= 3.0)
- 9) P43 - P OF WORK RELEASE (= .10)
- 10) P53 - P OF PAROLE WITHOUT WORK RELEASE (= .90)
- 11) P54 - P OF PAROLE FROM WORK RELEASE (= .73)
- 12) P35 - P OF PAROLE REVOCATION (= .33)
- 13) AP21 - ADJUST TO P OF MISDEMEANOR (= 0)
- 14) AP31 - ADJUST TO P OF PRISON (= 0)
- 15) AP18 - ADJUST TO P OF PROBATION (= 0)
- 16) ASL - ADJUST TO SENTENCE LENGTHS (= 0)

The parameters available for manipulation are as follows:

- 1) *Replicate multiple to create year population (RW)*: The program is relatively expensive to run and this factor provides the option of processing a random sample of the micro data set instead of processing the entire micro data set. The seed for starting the random process is constant so that the same random sample can be repeated with different runs; thus, variation in population estimates can be attributed to changes in simulated policies and assumptions rather than to sampling variation. The reciprocal of the value specified becomes the replicate multiplier. For example, setting this parameter at 1.0 results in the use of the entire data file in the population projection. Setting the parameter at 5.0 results in the use of a 1/5 or 20% sample of the data set.
- 2) *Estimated yearly growth rate (GROWTH)*: The population projection program repeats the processing of the estimated annual population of offenders five times modeling a five year time span in order to provide five year prison population projections. The growth parameter can be used to vary the size of the annual population for each of the five years. Expected changes in the population at risk or other demographic trends that are expected to influence the size of the population to be sentenced can be approximated in a limited way by varying this factor. The weight of each case is multiplied by the annual growth factor of the year being modeled. The growth factor does not provide for differential weighting for population subgroups.
- 3) *Number in micro data base (NCASES)*: This is the unweighted number of cases in the micro data file.

- 4) *Average length of work release (ALWR)*: As was indicated above, early release can be obtained via work release. This parameter establishes the number of months prior to the end of the established duration of imprisonment that work release would be obtained.
- 5) *Average length of parole or supervised release before revocation (ALPAR)*: After release from confinement on parole or supervised release (i.e., at the end of the imprisonment duration), it is assumed that parole/supervised release revocations for technical violations will occur resulting in reimprisonment. This parameter specifies the period of time after initial release before reimprisonment.
- 6) *Average length of added sentence from parole/supervised release revocation (ALIPAR)*: This parameter defines the number of months of additional imprisonment that results from a parole/supervised release revocation.
- 7) *Average length of probation before revocation (ALPRR)*: This factor defines the number of months after being placed on probation that elapse before probation revocation.
- 8) *Added institutional time after work release revocation (AAWR)*: Those released early on work release can have early release revoked and be returned to confinement. This parameter specifies the amount of additional institution time that would be served following work release revocation.
- 9) *Probability of receiving work release (P43)*: Specification of the percentage of those released from initial commitment (i.e., first release) who will be released early via work release.
- 10) *Probability of parole or supervised release without work release (P53)*: The remainder of the releases (1-work release probability) is specified by this parameter, i.e., it contains no new information.
- 11) *Probability of parole or supervised release from work release (P54)*: This defines the percentage of offenders who will successfully complete their early release program and be placed on parole or supervised release without being reimprisoned, i.e., work release successfully served. The program infers that the remainder of work release participants (1-probability of parole/supervised release from work release) will be reimprisoned.

- 12) *Probability of parole or supervised release revocation (P35):* This parameter defines the probability of parole or supervised release revocation for cases after first release on parole or supervised release. It should be noted that the base for the probability is based on first releases, not all releases. The latter includes releases following reimprisonment for parole or supervised release revocation.
- 13) *Adjustment to the probability of misdemeanor (AP21):* This parameter provides the option of varying every cell of the non-felony probability grid by the same factor. The probability specified is added to each cell probability in the grid, with the computed grid in operation for the run.
- 14) *Adjustment to the probability of prison (AP31):* This parameter functions like the probability of a misdemeanor. The probability specified is added to the probability of each cell in the probability of prison grid.
- 15) *Adjustment to the probability of probation revocation (AP18):* The probability specified is added to the probability of each cell in the probability of probation revocation grid.
- 16) *Adjustment to sentence lengths (ASL):* The probability specified is added to each cell of the grid in the adjustment file.

**Labels File:** The labels file is a data definition file which defines and labels the breakdown variables according to the format (2I2, A10). An example of the labels file is shown in Figure 9. The first column represents the sequence number of the breakdown variable showing seven variables in the sequence sex, race, age, offense type, consecutive sentences, district. The second column is the sequence number of the values for each variable. The third field is the label of the corresponding value. If the variables are changed in the micro data set and the base file, the labels file can be modified to reflect those changes in the data (see Appendix II).

**Seasonal Adjustment:** Prison commitments are subject to considerable seasonal variation which follow variation in court processing. While it is possible that a sample of cases from one year will typify seasonal variation in prison commitments and court processing, a more stable representation of seasonal variation is provided by averaging monthly prison commitments over a several year period.

The population projection program reproduces the historical pattern in the population projections via a monte carlo technique. The user establishes a series of twelve intervals in the program according to a cumulative probability distribution ranging

from 0 to 1. The size of each of the twelve intervals corresponds with the relative number of cases associated with each of the twelve months. When the user incorporates this seasonal adjustment technique, the offender's month of entry provided in the micro data file is ignored and instead each offender is randomly assigned to enter the system according to the intervals established with the probability distribution. The seasonal adjustment intervals contained in the population projection program are those used in the original application of the program. The section "Changing the Seasonal Adjustment" in Appendix II describes how to change the intervals to represent other seasonal patterns. If seasonal adjustments are deemed to be unnecessary, the randomizing section of the program can be removed, and a case will be entered on the basis of the month of entry contained in the micro data set (see Appendix II).

**Figure 9**  
Labels File

```

1 1 MALE
1 2 FEMALE
2 1 WHITE
2 2 BLACK
2 3 INDIAN
2 4 MEXICAN
2 5 OTHER
3 1 14-20 YRS
3 2 21-23 YRS
3 3 24-29 YRS
3 4 30-35 YRS
3 5 36-42 YRS
3 6 43+ YRS
4 1 HOMICIDE
4 2 OTHER PERS
4 3 SEX
4 4 DRUGS
4 5 ARSON
4 6 PROPERTY
4 7 OBSTR JUST
4 8 MISC
5 1 0-1 YRS
5 2 1-2 YRS
5 3 3-5 YRS
5 4 6-10 YRS
5 5 11-20 YRS
5 6 21+ YRS
6 1 NO CONS
6 2 CONS
7 1 1ST DIST
7 2 2ND DIST
7 3 3RD DIST
7 4 4TH DIST
7 5 5TH DIST
7 6 6TH DIST
7 7 7TH DIST
7 8 8TH DIST
7 9 9TH DIST
710 10TH DIST

```

**Operating Procedures and Output**

The projection program can be operated interactively or in batch mode. The procedures for operating the program will be discussed first for interactive processing and second for batch processing. A structure diagram of conversational action commands is shown in Figure 10.

**Interactive Processing:** The four data sets used by the program as well as the program itself are maintained on disk for interactive processing. Once the program has been obtained and executed, the processing choices are provided by the program through questions addressed to the user. The questions and processing options are outlined below in capitalized captions with sample responses shown in small letters following the "?" symbol. A more detailed description of each of the options is italicized underneath the option, and reductions of sample output are provided to illustrate program operation and output.

**SENTENCING GUIDELINES SIMULATION PROGRAM**

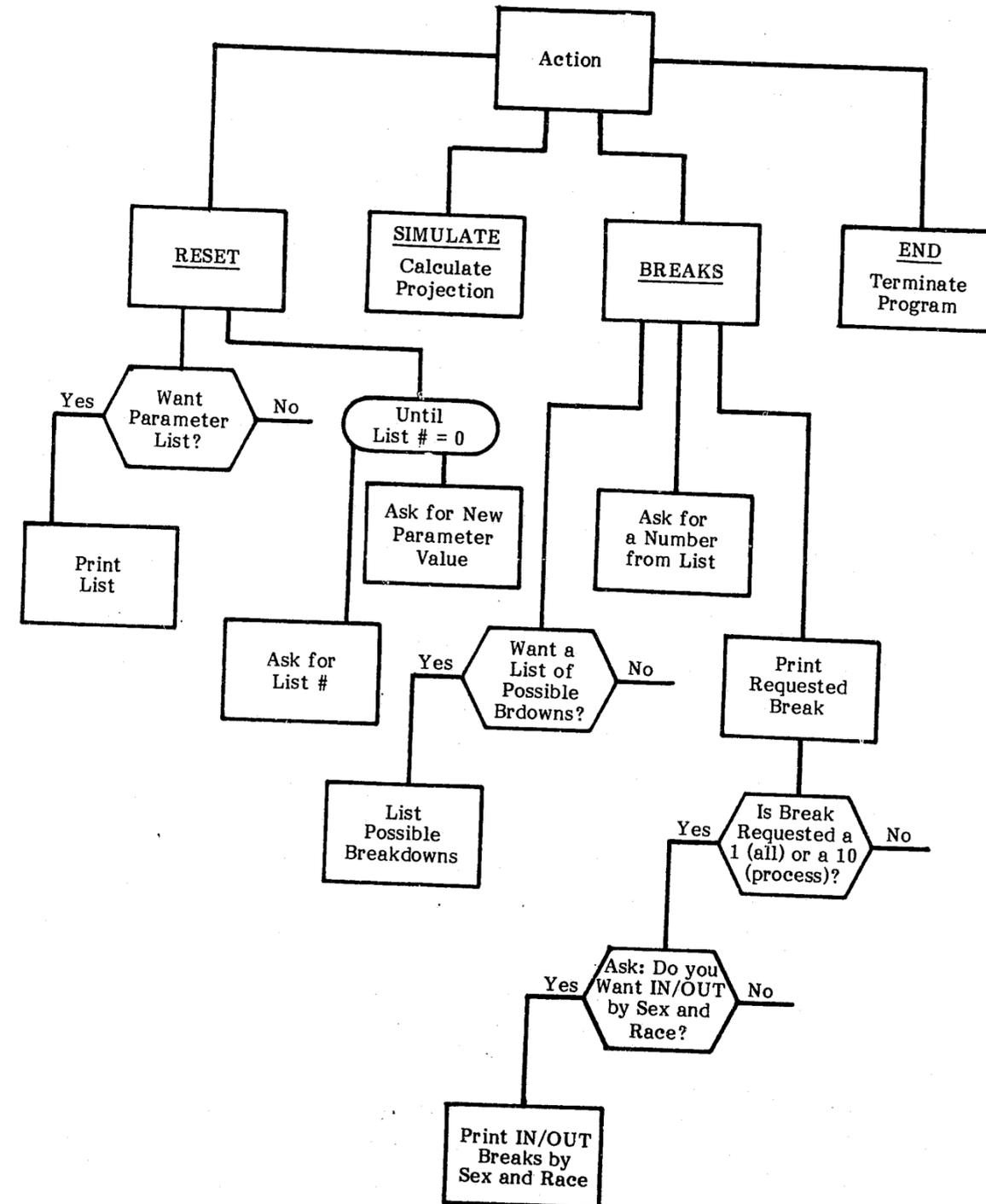
ENTER A ONE LINE "RUN NAME"  
 ? Sentencing Guidelines Simulation Program - Sample Run  
 DO YOU WANT TO DEFINE NEW DATA FILES (YES, NO)  
 ? yes

Four data files plus the labels file are automatically accessed by the program. The names of the four data files are PROB, BASE, DATA, and ADJUST. The default names can be changed by following the procedures in Appendix II. However, two methods are available for varying data sets without changing the default names. One method is to vary the content in the default files whenever the data sets are varied. The second method is to define new data files for each execution of the program for which different data sets are required. Only three of the four data files, PROB, DATA, and ADJUST, can be manipulated by the latter method. BASE, the population snapshot, cannot be varied by this method.

If the response to the above query is no, the program prints the probability grids in effect for the runs (see below). If the response is yes, the following instructions and queries occur.

ENTER PERMANENT FILE NAME -or-  
 PRESS "RETURN" IF NO NEW FILE  
 NEW NAME FOR FILE "ADJUST" (return)  
 NEW NAME FOR "PROB" (return)  
 NEW NAME FOR "DATA" data2

**Figure 10**  
 Structure Diagram\* of Conversational Action Commands



\* Structure diagrams are different from flow charts in that activity flows from left to right whereas flow diagram activity moves from top to bottom. Lower levels are merely elaborations of nodes at higher levels in structure diagrams, and a rectangle represents an action node, a hexagon represents a choice node, and an oval represents a repetition node.

The only change in data files was to substitute data2 for data and the probability grids in effect for the run are printed out as follows.

THIS IS THE "PROBABILITY OF GROSS MISDEMEANOR SENTENCE"  
MATRIX IN EFFECT FOR THIS RUN:

.116	.074	.091	.190	.000	.120	.000
.096	.160	.023	.000	.000	.055	.000
.105	.084	.144	.052	.181	.135	.047
.044	.033	.030	.000	.000	.000	.000
.035	.000	.000	.000	.000	.000	.000
.032	.013	.073	.140	.000	.000	.000
.044	.037	.000	.000	.000	.000	.000
.000	.084	.000	.000	.000	.000	.000
.000	.000	.000	.000	.000	.000	.000
.000	.000	.000	.000	.000	.000	.000

THIS IS THE "PROBABILITY OF COMMITMENT"  
MATRIX IN EFFECT FOR THIS RUN:

.010	.050	.150	.200	.200	.200	.300
.020	.050	.150	.250	.300	.300	.900
.030	.050	.150	.250	.800	.800	.900
.100	.100	.200	.300	.800	.900	.900
.100	.200	.300	.800	.900	.900	.900
.200	.200	.300	.800	.900	.900	1.000
.800	.800	.800	.900	1.000	1.000	1.000
.900	.900	.900	.900	1.000	1.000	1.000
.900	1.000	1.000	1.000	1.000	1.000	1.000
1.000	1.000	1.000	1.000	1.000	1.000	1.000

THIS IS THE "PROBABILITY OF PROBATION REVOCATION"  
MATRIX IN EFFECT FOR THIS RUN:

.039	.088	.062	.000	.000	.000	.000
.017	.000	.000	.097	.000	.000	.000
.011	.016	.076	.000	.399	.000	.000
.039	.043	.054	.226	.000	.000	.000
.025	.101	.000	.000	.000	.000	.000
.037	.072	.153	.000	.508	.000	.000
.040	.000	.000	.000	.000	.000	.000
.082	.000	.000	.000	.000	.000	.000
.000	.000	.000	.000	.000	.000	.000
.000	.000	.000	.000	.000	.000	.000

ACTION (RESET, BREAKS, SIMULATE, END)

? reset

The action procedure is the central command in the projection program. The Reset option gives the user the opportunity to reset any of the parameters on the parameter list. The Simulate option "runs" the program, i.e., results in the calculation of population projections. The Breaks option gives the user the option of obtaining the projections broken down by any or all of the available demographic variables and the process output. Breaks is a valid response only after Simulate has been completed. End terminates the execution of the program.

RESETTING OF INITIAL PARAMETERS

WOULD YOU LIKE PARAMETER LIST (YES, NO)

? yes

A no response will suppress the listing. A yes response provides the following listing.

PARAMETER LIST:

- 0) NO CHANGES
- 1) RW - REPLICATE MULT. TO CREATE YR POPULATION (= 1.0)
- 2) GROWTH - EST. YEARLY GROWTH RATE (= 1.03, 1.03, .98, .98, .98)
- 3) NCASES - N OF PROJECTION DATA BASE (= 2339)
- 4) ALWR - AVG. LENGTH WORK RELEASE (= 4.0)
- 5) ALPAR - AVG. LENGTH OF PAROLE BEFORE REVOCATION (= 5.3)
- 6) ALIPAR - AVG. LENGTH OF ADDED SENTENCE FROM PAROLE (= 3.0)
- 7) ALPRR - AVG. LENGTH OF PROBATION BEFORE REVOCATION (= 5.6)
- 8) AAWR - ADDED INSTITUTIONAL TIME AFTER WORK REL REVOKED (= 3.0)
- 9) P43 - P OF WORK RELEASE (= .10)
- 10) P53 - P OF PAROLE WITHOUT WORK RELEASE (= .90)
- 11) P54 - P OF PAROLE FROM WORK RELEASE (= .73)
- 12) P35 - P OF PAROLE REVOCATION (= .33)
- 13) AP21 - ADJUST TO P OF MISDEMEANOR (= 0)
- 14) AP31 - ADJUST TO P OF PRISON (= 0)
- 15) AP18 - ADJUST TO P OF PROBATION (= 0)
- 16) ASL - ADJUST TO SENTENCE LENGTHS (= 0)

ENTER LIST NUMBER FROM 0-16

? 5

ENTER ALWR

? 5

ENTER LIST NUMBER FROM 0-16

? 0

Any or all parameters can be changed. A response of 0 "NO CHANGES" will terminate the Reset process and the program will be ready for another action command.

ACTION (RESET, BREAKS, SIMULATE, END)

? simulate

As noted above, this is the heart of the population projection.

The output resulting from the simulation includes the average probabilities of imprisonment, misdemeanor sentence, and probation revocation and the random seed that would be used when the replicate multiplier option is in effect. The projected prison population counts for each of five years show the prison population counts at the end of the 12th month, at the end of the lowest month, at the end of the highest month, and the annual average, computed as the mean of the 12th month counts.

RUN NAME:

SENTENCING GUIDELINES SIMULATION PROGRAM - SAMPLE RUN

AVG. P OF PRISON = .195  
 AVG. P OF MISDEMEANOR SENTENCE = .069  
 AVG. P OF PROBATION REVOCATION = .037  
 RANDOM SEED = 50347

PROJECTED PRISON POPULATION COUNTS

	1	2	YEAR 3	4	5
12TH MONTH	1989	1953	1956	1952	1923
LOWEST MONTH	1989	1953	1938	1921	1908
HIGHEST MONTH	2077	2024	1981	1977	1974
ANNUAL AVERAGE	2034	1989	1958	1950	1940

ACTION (RESET, BREAKS, SIMULATE, END)

? breaks

WOULD YOU LIKE POPULATION BREAKDOWN LIST (YES, NO)

? yes

A no response will suppress the listing. A yes response produces the following listing.

POPULATION BREAKDOWN LIST:

- 1) ALL
- 2) SEX, WITH PERCENTAGE TABLE
- 3) RACE, WITH PERCENTAGE TABLE
- 4) AGE, WITH PERCENTAGE TABLE
- 5) OFFENSE TYPE, WITH PERCENTAGE TABLE
- 6) SENTENCE LENGTH, WITH PERCENTAGE TABLE
- 7) CONSECUTIVE SENTENCE, WITH PERCENTAGE TABLE
- 8) DISTRICT, WITH PERCENTAGE TABLE
- 9) POPULATION BY MONTH, WITH TIME SERIES PLOT
- 10) IN / OUT PROCESS

The five year breakdown counts are based on the 12th month counts of the projected prison population. The percentage breakdown table that accompanies each breakdown count is computed on the total count for the breakdown table such that percentages sum to 100%. The population count displayed by the population breakdown option 9 is the population count at the end of each month for each of the five years projected. A time series plot of the sixty data points accompanies the population count. The In/Out Process Data (option 10) provides monthly breakdowns of the following factors: 1) new commitments, i.e., initial court commitments--the count excludes probation

revocations and readmissions for technical parole revocations; 2) new commitments due to probation revocation; 3) readmissions due to technical parole revocation; 4) number entering work release; 5) readmissions due to failure on work release; 6) total monthly admissions; and 7) total monthly releases.

ENTER LIST NUMBER FROM 1-10

? 1

Selected output from the Breaks procedure is shown below.

SEX	1	2	YEAR 3	4	5
MALE	1902	1866	1868	1863	1832
FEHALE	86	87	87	89	90

PERCENTAGE TABLE BASED ON COLUMN SUMS

	1	2	YEAR 3	4	5
MALE	95.7	95.5	95.5	95.4	95.3
FEHALE	4.3	4.5	4.5	4.6	4.7
	100.0	100.0	100.0	100.0	100.0

IN / OUT PROCESS DATA

NEW COMMITMENTS, NOT INCLUDING THOSE REVOKED FROM PROB OR PAROLE

YEAR	1	2	3	4	5	MONTH 6	7	8	9	10	11	12	YR TOTALS	ANNUAL AVERAGE
1	86.	96.	83.	89.	85.	62.	60.	55.	78.	54.	69.	71.	886.	74.
2	84.	71.	82.	69.	112.	74.	69.	53.	78.	73.	71.	80.	916.	76.
3	82.	69.	73.	56.	96.	77.	91.	57.	80.	65.	76.	79.	902.	75.
4	80.	69.	88.	80.	76.	59.	55.	58.	98.	63.	63.	98.	888.	74.
5	99.	55.	81.	76.	74.	64.	52.	65.	80.	87.	61.	81.	875.	73.
AVG =	74.													

NEW COMMITMENTS DUE TO PROBATION REVOCATION

YEAR	1	2	3	4	5	MONTH 6	7	8	9	10	11	12	YR TOTALS	ANNUAL AVERAGE
1	12.	8.	9.	8.	11.	11.	9.	11.	11.	8.	10.	8.	115.	10.
2	12.	8.	9.	8.	10.	10.	10.	11.	12.	10.	7.	9.	117.	10.
3	12.	10.	9.	10.	9.	9.	12.	10.	11.	9.	9.	8.	116.	10.
4	11.	12.	10.	9.	8.	10.	12.	10.	10.	9.	7.	8.	116.	10.
5	12.	10.	10.	11.	10.	9.	11.	9.	11.	10.	7.	9.	118.	10.
AVG =	10.													

DO YOU WANT IN/OUT PROCESS DATA BY SEX AND RACE

? yes

Four of the seven In/Out Process factors can be obtained broken down by sex and race. The factors are new commitments, readmissions due to technical parole revocation, total admissions, and total releases. Selected output is shown as follows.

VARIABLE = SEX, VALUE = MALE

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	82.	92.	74.	86.	81.	58.	57.	53.	71.	50.	65.	65.	836.	70.
2	79.	67.	78.	64.	107.	69.	66.	48.	71.	70.	67.	77.	863.	72.
3	76.	66.	70.	53.	91.	74.	87.	54.	77.	59.	73.	73.	850.	71.
4	73.	68.	84.	76.	70.	53.	52.	56.	94.	59.	59.	94.	837.	70.
5	93.	53.	77.	72.	69.	62.	47.	60.	76.	81.	58.	77.	825.	69.
AVG =	70.													

VARIABLE = SEX, VALUE = FEMALE

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	4.	4.	9.	3.	4.	4.	3.	2.	7.	4.	3.	5.	51.	4.
2	5.	4.	4.	5.	5.	5.	3.	5.	7.	3.	4.	2.	53.	4.
3	6.	4.	4.	4.	5.	3.	4.	3.	3.	6.	4.	7.	52.	4.
4	6.	2.	4.	4.	5.	6.	3.	2.	4.	4.	5.	4.	51.	4.
5	6.	2.	4.	4.	5.	2.	5.	5.	4.	6.	3.	3.	50.	4.
AVG =	4.													

ACTION (RESET, BREAKS, SIMULATE, END)

? end

**Batch Processing:** The program was designed for interactive use, but as the volume of desired output grew, the need for batch use became evident. Rather than retaining two versions of the program, a single interactive version is maintained. The user constructs a command file such as that shown in Figure 11 with responses to each of the program queries with one response per line. The "?" symbol should not be placed in front of the responses. The interactive version is automatically modified and executed in batch mode by the instructions contained within a procedure file such as that shown in Figure 12. That procedure file is illustrative only since it is machine specific but the steps in this particular procedure file are as follows:

1. First the program file (Fortran IV source) is opened (made accessible to the operating system) along with the command file, TAPE5, for the program. The GET command opens these files.
2. Next the editor, XEDIT, is called and instructions are given to undefine the keyboard terminal as the input and output device. This is done by simply destroying the equivalence of TAPE5 to INPUT and TAPE6 to OUTPUT. The operating system will then expect to find the program command statements on a disk file named TAPE5, and the output will be written onto a disk file named TAPE6.
3. Just to be safe the program file is rewound, with the REWIND command.
4. The FETCH command opens the Minnesota Fortran subroutine library for use by the projection program.

5. RFL defines the needed memory as 75,000 octal locations.
6. The MNF command calls the Fortran compiler which compiles the program and retains the binary, object program as a file named LGO.
7. SETTL sets the time limit for execution of the program to a maximum of 500 seconds.
8. LGO causes the compiled program to be loaded and executed.
9. The remaining statements save the output from the execution on files named TAPE6 and TSDATA. The COST statement provides cost information, followed by a COPY statement which prints the output from TAPE6. Routing of the output to other, remote printers can be done by using whatever local commands are available for such printing.

Figure 11  
Command File

```

SENTENCING GUIDELINES SIMULATION PROGRAM - SAMPLE RUN
YES
ADJUST
PROB
DATA2
RESET
YES
0
SIMULATE
BREAKS
YES
1
YES
END

```

Figure 12  
Procedure File

```

RUNPROG.
GET (PROG, TAPE5)
XEDIT, PROG, NH, ?XC/=INPUT//?XC/=OUTPUT//?XQ
REWIND, PROG.
FETCH (MINNLIB/U=MNF)
RFL (75000)
UNLOAD (LGO)
MNF (R, I=PROG, E=3, R=0, L=L, K)
UNLOAD (L)
SETTL (500)
LGO.
RETAIN (TAPE6, TSDATA)
REWIND (TAPE6, TSDATA)
COST.
COPY (TAPE6, OUTPUT)

```

IV  
**MSG TIME SERIES PLOTTING PROGRAM**

A self-contained program was written which plots a variety of time series data for an historical period of five years and a projection period of five years, i.e., a total time frame of ten years. A projection data file which can be used for input into the time series plotting program is created with each run of the MSG projection program via the SIMLAT subroutine and written onto a file named TSDATA. Seven arrays are written in order as follows:

1. Total new sentences, males
2. Parole/supervised release revocations, males
3. Total releases, males
4. Total population, males
5. Total new sentences, females
6. Total population, females
7. Total population, males and females

Only the first six arrays are read by the plotting program. The total population is internally calculated from the population of males and the population of females arrays. Each of the arrays read according to the format (60(I8//)) contains sixty elements, one for each month of the five year projected period. There are no blank lines between the arrays.

The historical time series data required for the ten year plot is contained in a time series data file, TSBASE (see Figure 13). This data file, created by the user, contains eight arrays, each with sixty elements that provide the five year historical time series data.

Eight arrays contained in TSBASE are as follows:

1. Total new sentences, males
2. Technical parole/supervised release revocations, males
3. Monthly releases, males
4. Total population, males
5. Total new sentences, females
6. Technical parole/supervised release revocations, females
7. Monthly releases, females
8. Total population, females

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**Figure 13**  
Time Series Data File

TOTAL NEW SENTENCES - MALES											
60	65	68	81	76	71	71	57	74	73	62	91
80	53	78	61	78	80	55	64	89	65	66	65
65	80	118	82	76	93	66	70	83	85	86	73
104	78	101	81	84	66	63	64	92	91	69	78
85	96	69	81	100	80	76	71	77	86	79	79

TECHNICAL REVOCATIONS - MALES											
15	7	9	13	14	13	11	10	10	13	12	11
7	9	11	12	17	9	24	21	13	12	17	10
10	13	22	21	21	11	13	24	16	17	22	21
16	15	28	21	21	25	22	18	33	35	39	27
39	29	71	24	18	26	34	24	23	20	26	24

MONTHLY RELEASES - MALES											
42	36	38	57	54	63	64	66	57	59	46	97
45	75	101	62	62	98	83	111	105	94	109	119
78	83	105	75	81	83	70	85	98	94	92	98
77	86	115	94	102	93	91	102	117	96	126	123
81	109	103	91	101	105	103	90	86	112	92	128

TOTAL POPULATION - MALES											
1273	1317	1355	1396	1448	1453	1482	1495	1522	1533	1566	1593
1610	1610	1598	1591	1628	1638	1641	1641	1643	1655	1643	1632
1614	1611	1636	1672	1683	1699	1713	1719	1729	1727	1736	1747
1761	1799	1796	1813	1815	1796	1747	1739	1738	1760	1774	1763
1790	1823	1849	1841	1867	1881	1899	1906	1929	1927	1940	1930

TOTAL NEW SENTENCES - FEMALES											
3	6	3	2	8	4	6	0	1	4	1	3
3	6	3	1	1	4	5	6	8	3	6	1
5	4	0	4	5	3	3	5	3	3	5	8
8	6	4	4	3	3	3	9	4	9	7	7
7	2	6	5	6	5	3	4	5	7	3	7

TECHNICAL REVOCATIONS - FEMALES											
0	1	0	0	0	1	0	0	0	0	0	1
0	0	0	0	0	1	0	2	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	2	1
2	0	1	3	1	1	1	1	3	0	2	0

MONTHLY RELEASES - FEMALES											
1	3	7	3	3	3	9	5	3	4	2	4
2	4	0	2	3	8	4	5	2	10	5	6
7	7	8	6	6	6	8	2	5	1	3	3
3	6	3	1	1	3	8	6	11	6	2	5
4	7	5	6	4	8	1	12	10	5	7	15

TOTAL POPULATION - FEMALES											
50	52	57	54	56	61	60	57	54	58	54	56
54	57	60	63	61	62	61	65	73	73	72	70
70	71	65	59	59	58	57	56	57	58	63	65
71	73	76	78	84	84	73	75	69	67	72	73
76	74	73	78	83	84	87	86	85	87	82	68

Arrays six and seven are ignored by the plotting program as currently constituted and the plotting program calculates a total population array from total male population and total female population. The elements in the arrays are read according to the format (12I5) with one blank line between the end of one array and the label for the following table. The labels provided in TSBASE are used by the plotting programs for labeling the output.

Seven time series plots are displayed by the program output.

1. Total new sentences, males
2. Total new sentences, females
3. Technical revocations, males
4. Monthly releases, males
5. Total population, males
6. Total population, females
7. Total population

Figure 14 shows selected output from the MSG time series plotting program. The historical period January, 1975 to December, 1979 is plotted as is projection data for January, 1980 to December, 1984.

**Figure 14**  
MSG Time Series Output

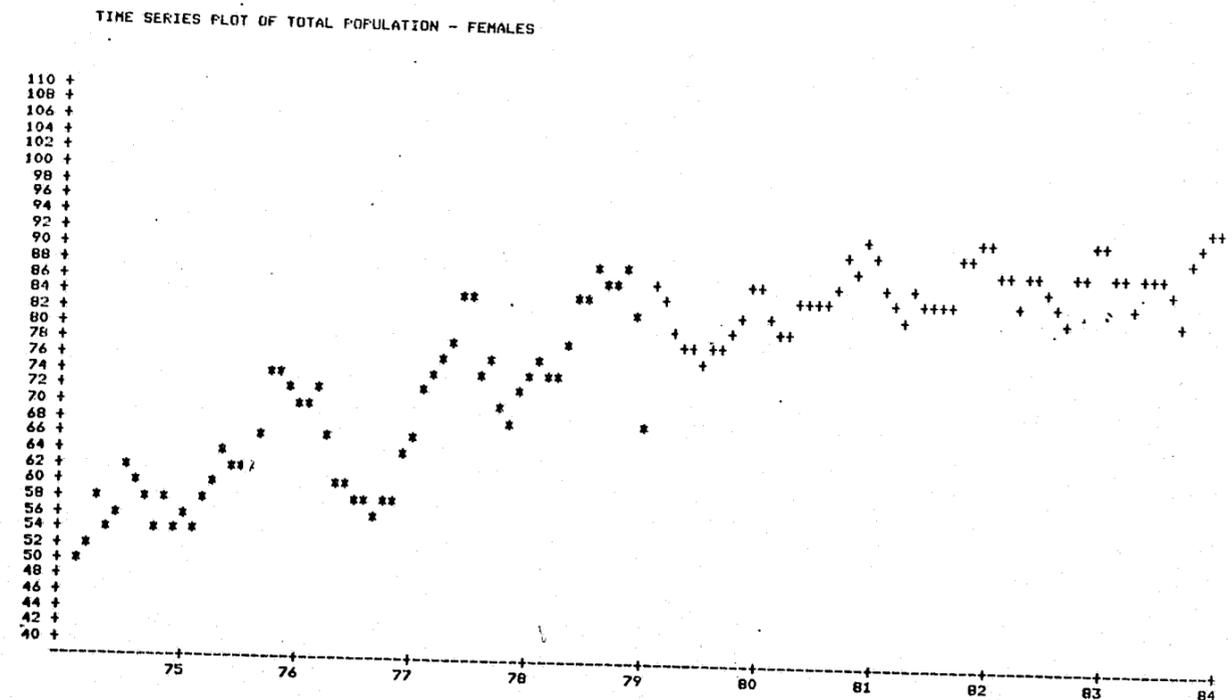


Fig. 14a

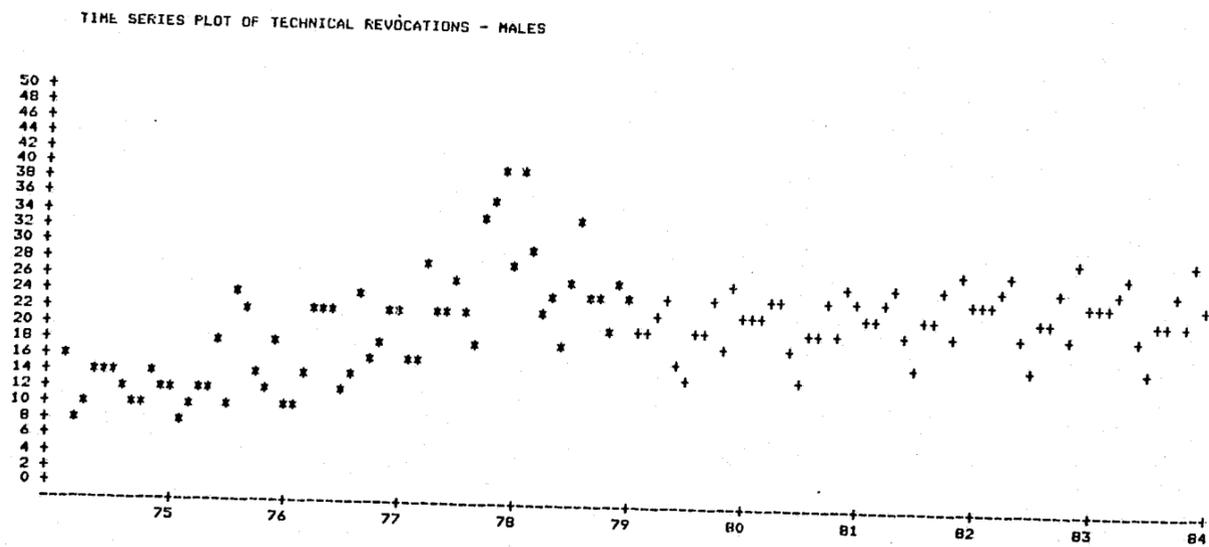
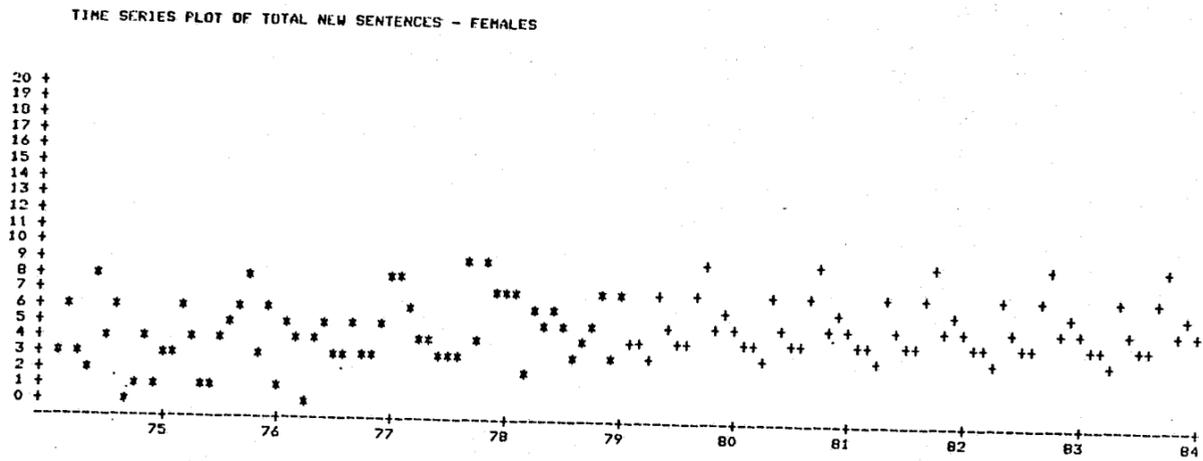


Fig. 14b

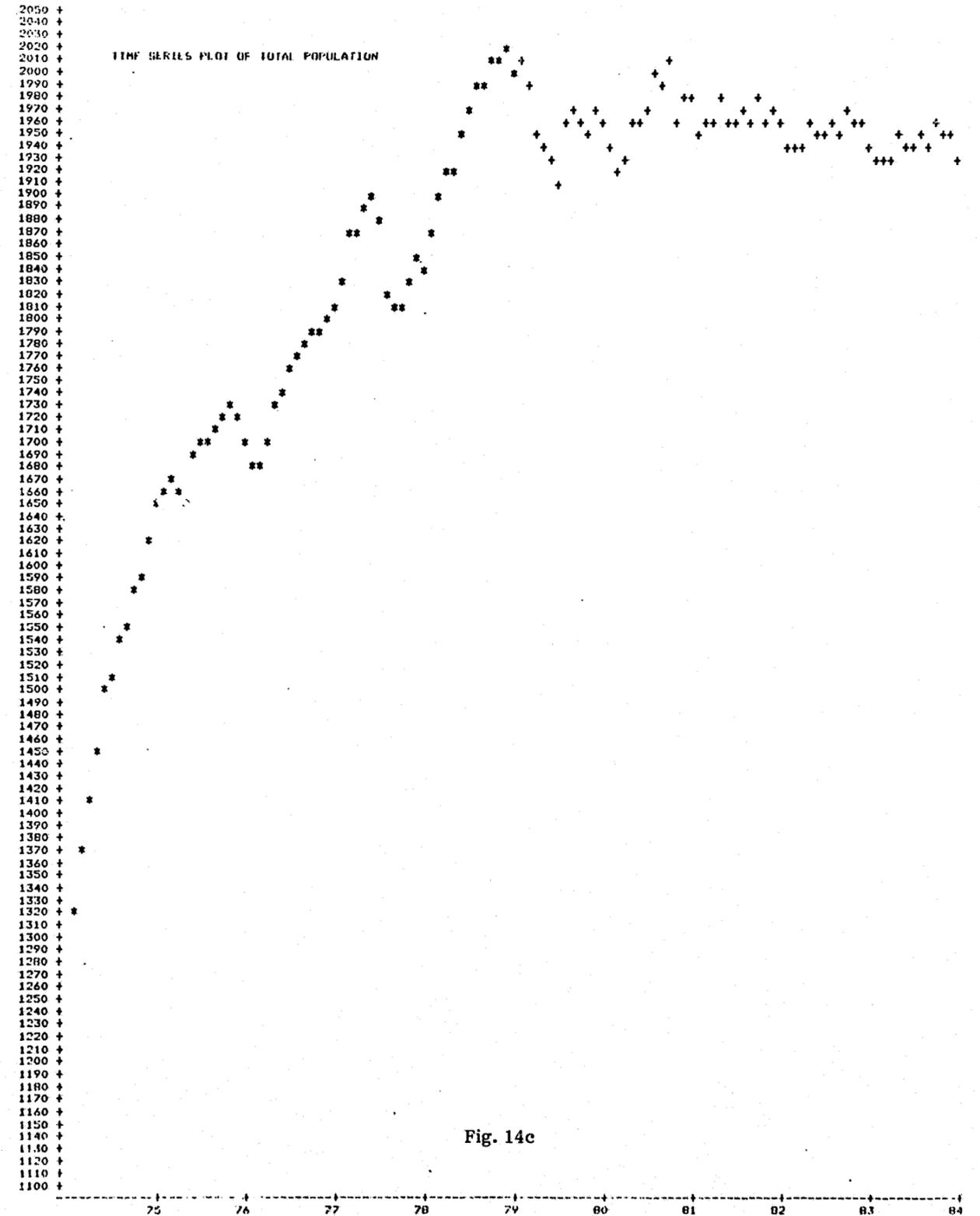


Fig. 14c

**PROGRAM STRUCTURE AND SUBROUTINES**

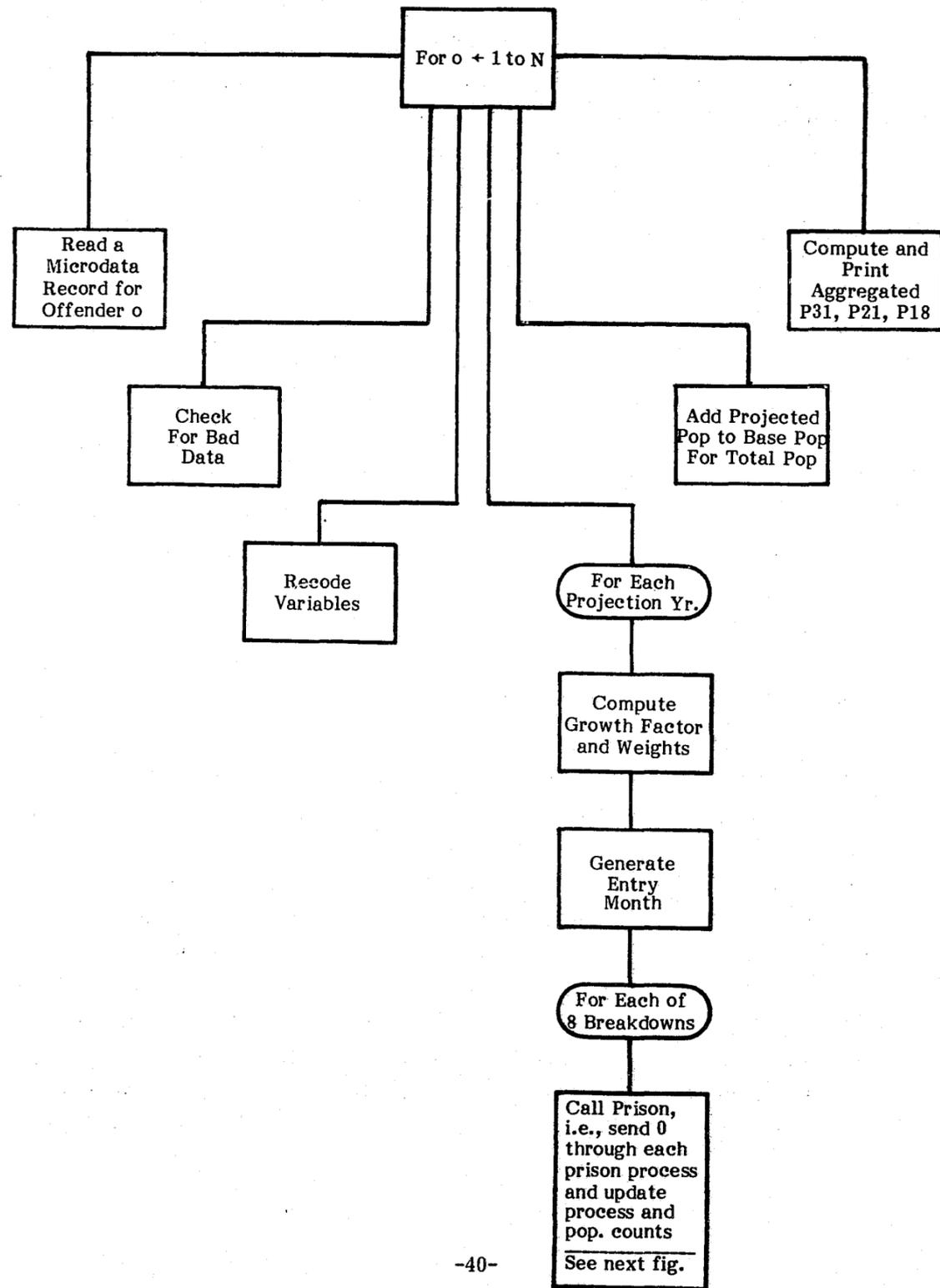
**Program Structure**

Figure 10 in the text and Figures I-1, I-2, I-3, and I-4 clarify the structure of the MSG population projection program. In addition, a summary description of each of the program procedures appears at the end of Appendix I. The first four of these figures outline the user choices and the sequential flow of tasks. The reader should be reminded that the implicit flow of events is from left to right rather than from top to bottom. The vertical dimension of these charts identifies task substructure rather than a necessary sequence of events. Figures I-4a, I-4b, and I-4c map the structure of procedure calls; all the action nodes (rectangles) represent subroutines or functions, consequently these diagrams are useful in reading and understanding the program.

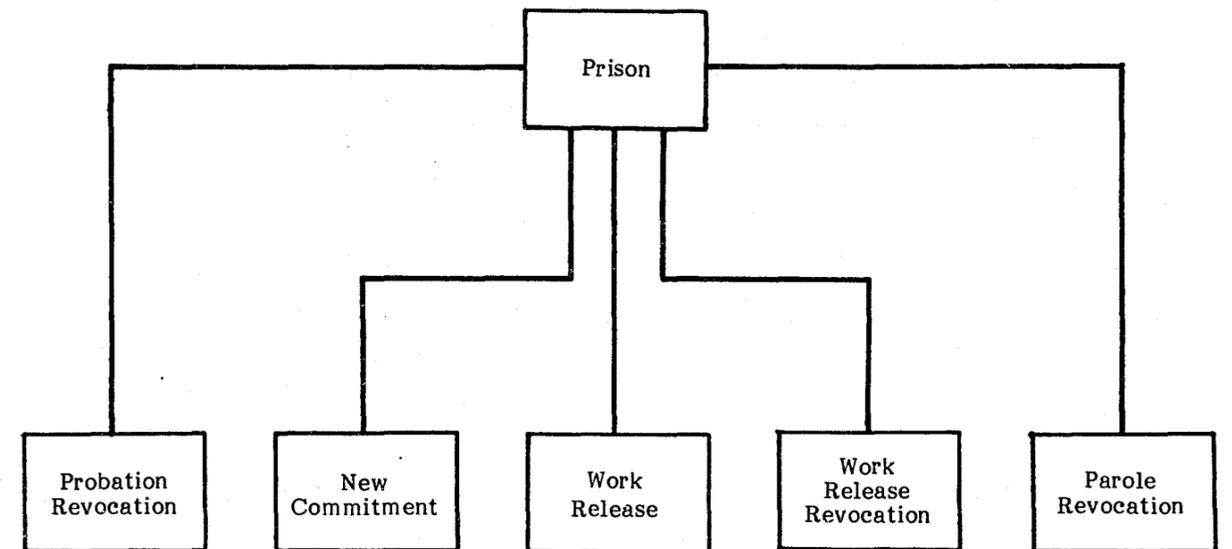
The projection methodology utilized by the program depends upon a recurring, annual entry process. The micro data file contains hypothetical new offenders for each year of the projection. Each of the N offenders in the micro data is sent through the prison microprocesses once for each year. This process is depicted in Figure I-1, and the subroutine reference (call) structure is given in Figure I-4b. The sequence of prison processes is given in Figure I-2, where the order from left to right is consistent with the algorithmic structure contained within the PRISON subroutine. In fact, the order is arbitrary but every offender simulate must flow through each of the five event processes: probation revocation, new commitment, work release, work release revocation, and parole revocation.

***Estimating process data for year one:*** The micro data simulation procedures described thus far adequately represent new commitments but fail to account for an existing population base of inmates who entered prison before the projection time began. The aggregated BASE arrays provide a partial solution to this problem--they specify the carry over population and targeted release dates. This allows us to estimate total projected, month-by-month population, but it does not give us enough information to estimate month-by-month process data including new commitments, new probation revocations, releases, etc. To generate this part of the projection, a technique was developed as follows: when an offender is sent through the prison system for the first projection year, he or she is also sent through the hypothetical system for each of the five previous years. Thus the projection model uses a ten year (years -5, -4, -3, -2,

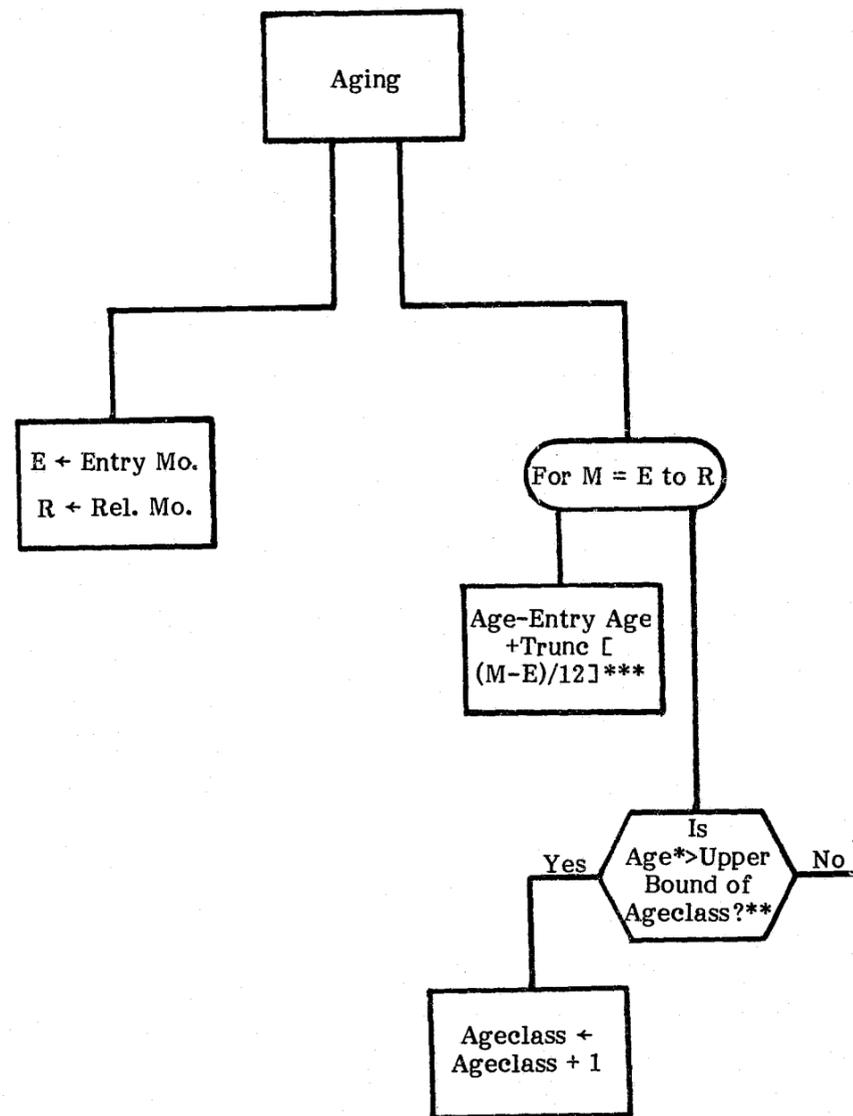
**Figure I-1**  
Structure Diagram of Subroutine PROJIN  
Showing Overview of Microdata Processing



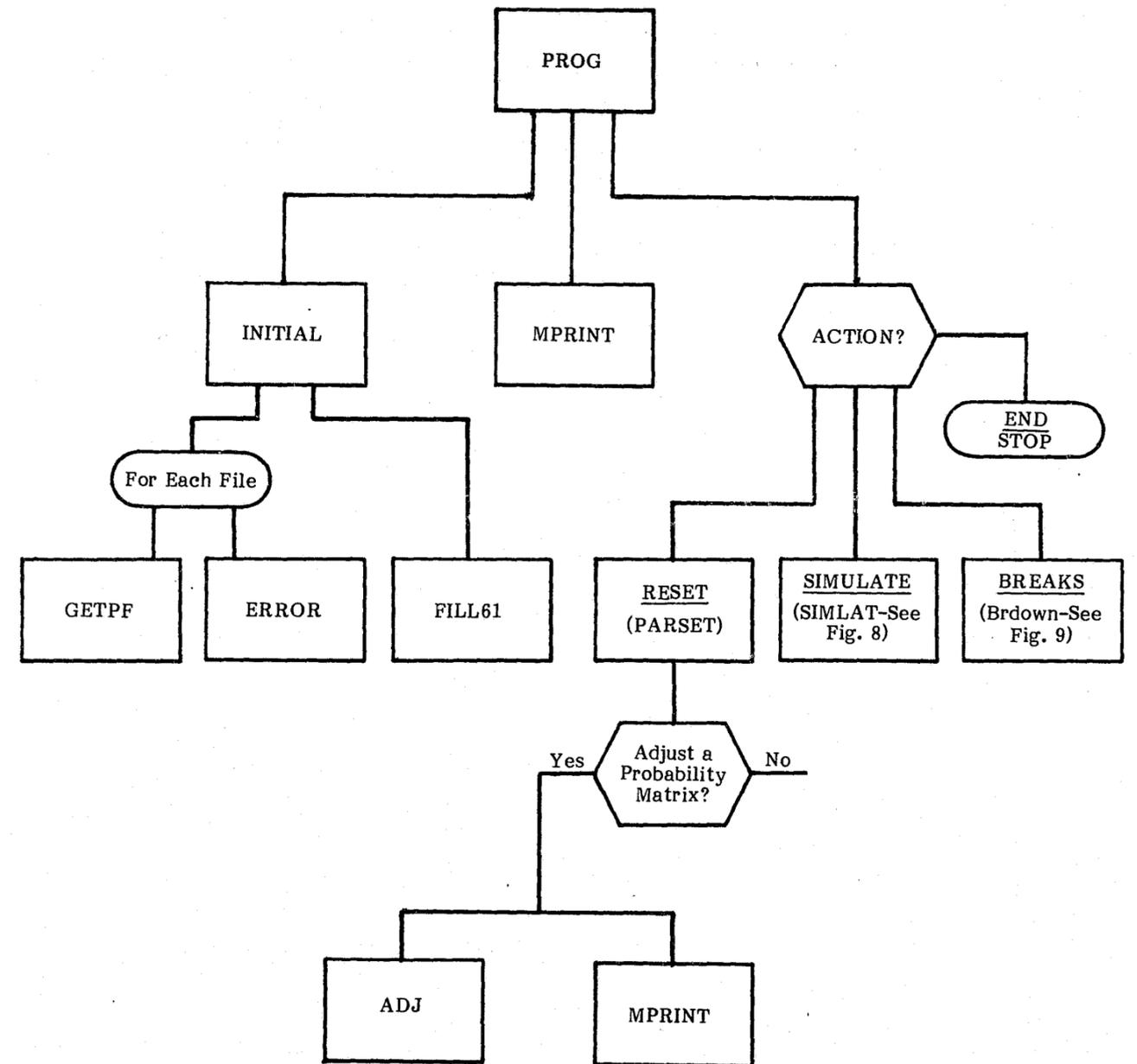
**Figure I-2**  
Structure Diagram of Prison Subroutine Showing Prison Microprocesses



**Figure I-3**  
Structure Diagram of Aging Process



**Figure I-4a**  
Overall Structure Diagram





-1, 1, 2, 3, 4, 5) simulation in order to procure a five year projection. This process does not absorb as much computer time as might be expected because the average commitment period is about two years. Thus by year one of the projection, most new prison entries have already been released. Certainly most of the inmates entering in years -5 and -4 have been released by the first projection year.

**Aging:** Since age is reported in the program output by age classes or categories and since age is not a static variable in a projection model, it was necessary to develop an algorithm to keep track of an offender's age during the projection period and to update the age class distribution according to the actual process of aging. Figure I-3 outlines the algorithm which calculates "real" or chronological age over the entire projection period. This algorithm is embedded within a subroutine called AGING. The lower and upper bounds of each of the six age classes are defined in a data statement for the array CAGE. The interval boundaries can be changed by modifying this data statement. This aging process simulates the extent to which inmates have grown older during their prison term. The results are observable in the output breakdown table of inmate population for each age class. This table takes into account the fact that during a five year period some inmates will have crossed the boundary from one age class to another as they grow older.

#### Summary Descriptions of Subroutines

**ADJ** ADJ is called by PARSET to calculate a new probability matrix given an adjustment factor entered by the RESET command.

**AGING** AGING increments an offender's age during the 60 month projection period. It is called from PRISON for each month that an offender resides in prison, but only during the processing of the demographic breakdown by age (see Figure I-3).

**APOP** Here the POP and TOP (sometimes called T) are simply added together. POP contains the base population counts. TOP contains the counts for all new commitments.

**AVG** This function is called by PROJIN to compute the average of each IN/OUT process array and store it in 61st element of each array.

**AVG20** This subroutine functions the same as AVG but it operates upon the sex and race breakdowns of process attributes.

**BRDOWN** BRDOWN manages requests for specified tables and calls CHART to print them out.

**CHART** This subroutine prints out tables of demographic breakdowns.

**COPY** This procedure simply copies the appropriate IN/OUT process array into an area that subroutine WRPRO uses to operate upon and print.

**DOPOP** DOPOP takes the BASE arrays and creates a corresponding POP array, which is the total population value for that particular base minus each individual cell frequency. The resulting POP arrays (six of them) at this point contain the monthly population counts under the assumption that no new commitments are made.

**ERROR** This subroutine prints the name of any file that has errors in attempts to read the file.

**FILL61** This subroutine fills up the 61st element in each of the base array rows with the sum of that particular row.

**GETPF** This is a library subroutine which opens each data file. It can be eliminated if one desires to open files in job control language.

**HILO** The lowest and highest month for each year are located by this routine.

**INITIAL** This procedure initializes all constants and then reads all files except the micro data file; then it reads the file called BASE and calculates the sum of all BASE rows by calling FILL61.

**MPRINT** This routine prints out the three probability grids at the beginning of the program's execution. The grids are also printed again if the user requests an adjustment factor to modify a probability grid.

**PARSET** PARSET is entered from the main program if the user selects the RESET option. It processes any resetting of parameters.

**PCT** PCT is called from CHART to calculate and print percentage tables of the demographic breakdowns.

**PLOT** PLOT is called by CHART to print the time series graph.

**PRISON** This procedure contains the algorithms to calculate the following:

- prison population counts based upon probation revocation
- prison population counts based upon sentencing
- prison population counts based upon termination of work release

d. reduced prison population counts based upon work release  
 e. prison population counts based upon parole revocation

PROG      PROG is the main program and its role is to call the initialization procedure and process the ACTION commands (see Figure 10).

PROJIN    PROJIN initializes TOPs arrays and then reads the DATA file. For each case, it recodes appropriately and then calls PRISON for each output table and each year. After all the cases have been processed, APOP is called for each POP array. Figure I-1 shows the structure of this procedure.

RANF      This is the library function to generate a random number.

RANSET    This is a library subroutine which seeds the random number function-  
 ing RANF.

SECOND    This is a library subroutine which calls the system clock in order to initialize the random number seeding routine, RANSET.

SIMLAT    SIMLAT generates the population projection by first calling DOPOP for each of the six POP arrays. Next it calculates the POPC array from the marginals for the consecutive sentencing table. Next it calls PROJIN, and finally it calls the HILO procedure and prints out the main population table.

WRIOSR    This subroutine generates IN/OUT process arrays for sex and race breakdowns.

WRPRO     WRPRO calculates yearly totals and prints each IN/OUT process array.

Appendix II

**ACQUISITION AND MODIFICATION OF THE MSG PROGRAMS**

Acquiring the MSG Programs

The MSG population projection program and MSG time series program can be obtained by sending an unlabeled 9 track tape to:

Minnesota Sentencing Guidelines Commission  
 Suite 284 Metro Square Building  
 7th & Robert Streets  
 St. Paul, Minnesota 55101

The MSG population projection program and time series program are available in two formats as indicated in Figure II-1: 1) interactive; and 2) batch. The major difference between the two formats is the inclusion of line numbers in the interactive format. The request should specify which format of the programs is desired.

Modifying and Converting the Program

The main task of converting the program to run on another computer system is to identify and replace subroutines and functions that are a part of the local Minnesota program library. The most system-dependent feature utilized is the subroutine GETPF, which opens the needed data files from within the program. Many systems have equivalent subroutines; other systems require that the user open the file external to the program with job control language statements. One can use GET or OPEN statements within the commands to the operating system (job control language) and thus replace the functions performed by the GETPF calls now within the program.

The other major use of local procedures is the use of random number generation procedures. The random numbers are used for two purposes: 1) to randomly sample from the micro data file and thus reduce processing time, and 2) to randomly assign month of commitment so as to adjust for seasonality. The sampling process is described in the description of parameter 1, the replicate multiplier. The seasonal adjustment is described in the section on data files and data parameters.

RANF is the function to produce a new random number. RANSET is the subroutine which initializes the RANF "seed," which is the starting number for the entire series of numbers generated. A subroutine called SECOND is used to obtain a nearly random number from the system clock. This number is used to initialize RANSET, which in

**Figure II-1**  
MSG Program Formats

**Interactive**

```
00100 PROGRAM PROG7 (INPUT,OUTPUT,TAPE1,TSDATA,TAPES=INPUT,
00110+ TAPE6=OUTPUT,TAPE2=TSDATA)
00120C
00130C PROGRAM FOR THE MINNESOTA SENTENCING GUIDELINES COMMISSION
00140C PROGRAMMER MARK L. HONGIAT
00150C PROGRAM DESIGN BY RONALD E. ANDERSON
00160C PROJECT DESIGN BY KAY A. KNAPP
00170C
00180 COMMON // VALUES(39,3),ADJUST(10,10),BASES(2,61),BASER(5,61),
00190+ BASEA(6,61),BASED(8,61),BASESL(6,61),BASEC(12,61),BASED(10,61),
00200+ BASE(61),POPS(2,60),POPR(5,60),POPA(6,60),POPD(8,60),POPSL(6,60),
00210+ FOPC(12,60),POPD(10,60),POP(60),P21(10,10),P31(10,10),P18(10,10)
00220 COMMON /CONST/ NR,NC,NYR,NM,NCASES,RW,GROWTH(5),YR,ALWR,ALPAR,ALIPAR,
00230+ ALFRR,AAWR,P43,P53,P54,P35,P75,P63,P34,AP21,AP31,AP18,ASL
00240 COMMON /PROCES/ ENTRY(61),TOTC(61),PRC(61),PARC(61),WORK(61),PWRC(61),
00250+ REL(61),ONE,TRIM,TWO,THREE,PRCS(2,61),PRCR(3,61),
00260+ ENTRYR(2,61),ENTRYR(3,61),WORKS(2,61),WORKR(3,61),
00270+ PWRC(2,61),PWRCR(3,61),PARCS(2,61),PARCR(3,61),
00280+ RELS(2,61),RELR(3,61),TOTCS(2,61),TOTCR(3,61)
00290 COMMON /MARG/ CMARG(12)
00300 COMMON /LABEL/ LABELS(8)
00310 COMMON /COMAND/ RESET,BREAKS,SIMULA,END
00320 COMMON /UNITS/ IU,OU,ITAPE1
00330 COMMON /ANSWER/ YES,NO,DOSIM
00340 COMMON /FILES/ PRFILE,ADFILE,DAFILE
00350 COMMON /RNAME/ RUN(5,8),NLINES
00360C
00370 INTEGER VALUES,BASES,BASER,BASEA,BASED,BASESL,BASEC,BASED,BASE
```

**Batch**

```
PROGRAM PROG7 (INPUT,OUTPUT,TAPE1,TSDATA,TAPES=INPUT,
1 TAPE6=OUTPUT,TAPE2=TSDATA)
C
C PROGRAM FOR THE MINNESOTA SENTENCING GUIDELINES COMMISSION
C PROGRAMMER MARK L. HONGIAT
C PROGRAM DESIGN BY RONALD E. ANDERSON
C PROJECT DESIGN BY KAY A. KNAPP
C
COMMON // VALUES(39,3),ADJUST(10,10),BASES(2,61),BASER(5,61),
1 BASEA(6,61),BASED(8,61),BASESL(6,61),BASEC(12,61),BASED(10,61),
2 BASE(61),POPS(2,60),POPR(5,60),POPA(6,60),POPD(8,60),POPSL(6,60),
3 FOPC(12,60),POPD(10,60),POP(60),P21(10,10),P31(10,10),P18(10,10)
COMMON /CONST/ NR,NC,NYR,NM,NCASES,RW,GROWTH(5),YR,ALWR,ALPAR,ALIPAR,
1 ALFRR,AAWR,P43,P53,P54,P35,P75,P63,P34,AP21,AP31,AP18,ASL
COMMON /PROCES/ ENTRY(61),TOTC(61),PRC(61),PARC(61),WORK(61),PWRC(61),
1 REL(61),ONE,TRIM,TWO,THREE,PRCS(2,61),PRCR(3,61),
2 ENTRYR(2,61),ENTRYR(3,61),WORKS(2,61),WORKR(3,61),
3 PWRC(2,61),PWRCR(3,61),PARCS(2,61),PARCR(3,61),
4 RELS(2,61),RELR(3,61),TOTCS(2,61),TOTCR(3,61)
COMMON /MARG/ CMARG(12)
COMMON /LABEL/ LABELS(8)
COMMON /COMAND/ RESET,BREAKS,SIMULA,END
COMMON /UNITS/ IU,OU,ITAPE1
COMMON /ANSWER/ YES,NO,DOSIM
COMMON /FILES/ PRFILE,ADFILE,DAFILE
COMMON /RNAME/ RUN(5,8),NLINES
C
INTEGER VALUES,BASES,BASER,BASEA,BASED,BASESL,BASEC,BASED,BASE
```

turn initializes the RANF series. This algorithm produces a unique series of random numbers each time the program is executed. For some purposes, e.g., program checkout, the user may need the same series of random numbers used by the program. This can be done by replacing the variable NUMODD in the RANSET call statement with a previously used random seed. RANSET is called within subroutine PROJIN and is called only once. The value of the random seed, NUMODD, is printed in the program output of each simulation. This value can be used in subsequent runs by simply inserting it in place of NUMODD in the CALL RANSET statement.

**Changing File Names:** The data files named PROB, ADJUST, and DATA are all defined in the seventh DATA statement within the main program. The file names can be easily changed by modifying this DATA statement, replacing the existing file names with new ones. The LABELS file is only defined in its GETPF statement, which is the first executable statement within the INITIAL subroutine. It is possible to change the LABELS file name by changing the second argument or value within this GETPF statement. The same is true of the BASE file except that it is associated with the GETPF statement appearing right after statement number 32.

All of these five data files are equivalenced to TAPE1, thus the I/O number within the associated READ statements is one. The I/O numbers, which are sometimes called data set reference numbers, can be changed within each of the associated READ statements. Corresponding file definitions will have to be specified in the PROGRAM statement or in the job control language.

**Changing Input Data Formats:** To ease the task of modifying an input data format the following table gives the format statement numbers and the location of each.

File Name	Subroutine	Format Number
LABELS	INITIAL	6
ADJUST	"	free-field
PROB	"	free-field
BASE	"	33
DATA	PROJIN	21

In each case, the same format statement is used for the entire contents of a file. Two files, ADJUST and PROB, are read in free-field and thus have no designated format. If so desired, one could easily add a fixed format statement to these input operations. In free-field input, a blank space or comma must separate data values in the input medium or file.

**Changing Parameter Defaults:** The initial and therefore default values of all the parameters are assigned in the first few lines of the INITIAL subroutine. These values

can be temporarily changed during the execution of the program. Permanent changes can be made by finding the desired parameter assignment statement within INITIAL and then simply changing the initial value to which it is assigned.

**Changing the Range of Breakdown Variables:** The lower and upper bounds of each breakdown variable are currently defined as follows:

<u>Name</u>	<u>Lower Bound</u>	<u>Upper Bound</u>
SEX	1	2
RACE	1	5
AGE	1	6
OFFENSE TYPE	1	8
SENT. LENGTH	1	6
DISTRICT	1	10

No change is required if fewer categories are used but if it is necessary to increase the range of categories of any variable, the upper boundary limits must be respecified in several areas within the program. First, the dimensions must be changed on all associated COMMON arrays. These arrays include any arrays with the prefixes BASE or POP. If sex or race are changed to have a greater range, arrays beginning with the prefixes PRC, ENTRY, WORK, PWRC, PARC, REL, and TOTC may have to be changed within the "PROCES" COMMON BLOCK. In addition, the TOP arrays, which are local to subroutine PROJIN, may have to be modified. Second, the upper bounds are specified as constants in the arguments of the subroutine call statements for the following subroutines: FILL61, DOPOP, PRISON and APOP. The constants in these subroutine calls have to be changed whenever an upper bound has to be increased.

**Changes in Output:** Since the output specifications are scattered throughout the program, it is not possible to provide a thorough guide to output changes, however, some general guidelines will be suggested. The breakdown variable names are defined within the third DATA statement within the main program. The names or labels of the categories of these variables are given in the file called LABELS. Otherwise, the labels and descriptions in the output are specified in the relevant format statements.

One area of special note is the printing of the dispositional lines associated with the sentencing grid. These lines are printed within the three probability matrices printed at the beginning of the program output. These lines can be changed by modifying format statements 21, 22, 23, 24, 25, 26, and 27 within the MPRINT subroutine.

**Changing the Seasonal Adjustment:** Within the PROJIN subroutine a monte carlo (random) assignment of month is made for each offender. The intervals of the cumulative probability distribution are given in the array AM, which is defined in the

first DATA statement within PROJIN. These values can be changed to produce a different seasonal pattern. If the user does not want any seasonal adjustment, the relevant statements can be removed. This includes the

XRAN=RANF(0.0)

statement and the entire "DO 25" loop. All of these statements are embedded within the "DO 29" loop.

Appendix III  
**MSG POPULATION PROJECTION PROGRAM OUTPUT**

SENTENCING GUIDELINES SIMULATION PROGRAM

ENTER A ONE LINE \*RUN NAME\*  
 ? SENTENCING GUIDELINES SIMULATION PROGRAM - SAMPLE 'IN'  
 DO YOU WANT TO DEFINE NEW DATA FILES (YES,NO)  
 ? YES  
 ENTER PERMANENT FILE NAME -OR- PRESS 'RETURN' IF NO NEW FILE  
 NEW NAME FOR FILE 'ADJUST '  
 ?  
 NEW NAME FOR FILE 'PROB '  
 ?  
 NEW NAME FOR 'DATA '  
 ? DATA2

THIS IS THE \*PROBABILITY OF GROSS MISDEMEANOR SENTENCE\*  
 MATRIX IN EFFECT FOR THIS RUN:

.116	.074	.091	.190	.000	.120	.000
.096	.160	.023	.000	.000	.055	.000
.105	.084	.144	.052	.181	.135	.047
.044	.033	.030	.000	.000	.000	.000
.035	.000	.000	.000	.000	.000	.000
.032	.013	.073	.140	.000	.000	.000
.044	.037	.000	.000	.000	.000	.000
.000	.084	.000	.000	.000	.000	.000
.000	.000	.000	.000	.000	.000	.000
.000	.000	.000	.000	.000	.000	.000

THIS IS THE \*PROBABILITY OF COMMITMENT\*  
 MATRIX IN EFFECT FOR THIS RUN:

.010	.050	.150	.200	.200	.200	.300
.020	.050	.150	.250	.300	.300	.900
.030	.050	.150	.250	.800	.800	.900
.100	.100	.200	.300	.800	.900	.900
.100	.200	.300	.800	.900	.900	.900
.200	.200	.300	.800	.900	.900	1.000
.800	.800	.800	.900	1.000	1.000	1.000
.900	.900	.900	.900	1.000	1.000	1.000
.900	1.000	1.000	1.000	1.000	1.000	1.000
1.000	1.000	1.000	1.000	1.000	1.000	1.000

THIS IS THE \*PROBABILITY OF PROBATION REVOCATION\*  
 MATRIX IN EFFECT FOR THIS RUN:

.039	.088	.062	.000	.000	.000	.000
.017	.000	.000	.097	.000	.000	.000
.011	.016	.076	.000	.399	.000	.000
.039	.043	.054	.226	.000	.000	.000
.025	.101	.000	.000	.000	.000	.000
.037	.072	.153	.000	.508	.000	.000
.040	.000	.000	.000	.000	.000	.000
.082	.000	.000	.000	.000	.000	.000
.000	.000	.000	.000	.000	.000	.000
.000	.000	.000	.000	.000	.000	.000

ACTION (RESET,BREAKS,SIMULATE,END)  
? RESET

RESETTING OF INITIAL PARAMETERS  
WOULD YOU LIKE PARAMETER LIST (YES,NO)  
? YES

PARAMETER LIST:

- 0) NO CHANGES
- 1) RW - REPLICATE MULT. TO CREATE YR POPULATION (= 1.0)
- 2) GROWTH - EST. YEARLY GROWTH RATE (= 1.03, 1.03, .98, .98, .98)
- 3) NCASES - N OF PROJECTION DATA BASE (= 2339)
- 4) ALWR - AVG. LENGTH WORK RELEASE (= 4.0)
- 5) ALPAR - AVG. LENGTH OF PAROLE BEFORE REVOCATION (= 5.3)
- 6) ALIFAR - AVG. LENGTH OF ADDED SENTENCE FROM PAROLE (= 3.0)
- 7) ALPRR - AVG. LENGTH OF PROBATION BEFORE REVOCATION (= 5.6)
- 8) AAWR - ADDED INSTITUTIONAL TIME AFTER WORK REL REVOKED (= 3.0)
- 9) P43 - P OF WORK RELEASE (= .10)
- 10) P53 - P OF PAROLE WITHOUT WORK RELEASE (= .90)
- 11) P54 - P OF PAROLE FROM WORK RELEASE (= .73)
- 12) P35 - P OF PAROLE REVOCATION (= .33)
- 13) AF21 - ADJUST TO P OF MISDEMEANOR (= 0)
- 14) AF31 - ADJUST TO P OF PRISON (= 0)
- 15) AF18 - ADJUST TO P OF PROBATION (= 0)
- 16) ASL - ADJUST TO SENTENCE LENGTHS (= 0)

ENTER LIST NUMBER FROM 0-16  
? 0

ACTION (RESET,BREAKS,SIMULATE,END)  
? SIMULATE

RUN NAME:

SENTENCING GUIDELINES SIMULATION PROGRAM - SAMPLE RUN

AVG. P OF PRISON = .195  
AVG. P OF MISDEMEANOR SENTENCE = .069  
AVG. P OF PROBATION REVOCATION = .037  
RANDOM SEED = 50347

PROJECTED PRISON POPULATION COUNTS

	YEAR				
	1	2	3	4	5
12TH MONTH	1989	1953	1956	1952	1923
LOWEST MONTH	1989	1953	1938	1921	1908
HIGHEST MONTH	2077	2024	1981	1977	1974
ANNUAL AVERAGE	2034	1989	1958	1950	1940

ACTION (RESET,BREAKS,SIMULATE,END)  
? BREAKS

WOULD YOU LIKE POPULATION BREAKDOWN LIST (YES,NO)  
? YES

POPULATION BREAKDOWN LIST:

- 1) ALL
- 2) SEX, WITH PERCENTAGE TABLE
- 3) RACE, WITH PERCENTAGE TABLE
- 4) AGE, WITH PERCENTAGE TABLE
- 5) OFFENSE TYPE, WITH PERCENTAGE TABLE
- 6) SENTENCE LENGTH, WITH PERCENTAGE TABLE
- 7) CONSECUTIVE SENTENCE, WITH PERCENTAGE TABLE
- 8) DISTRICT, WITH PERCENTAGE TABLE
- 9) POPULATION BY MONTH, WITH TIME SERIES PLOT
- 10) IN / OUT PROCESS

ENTER LIST NUMBER FROM 1-10  
? 1

SEX	YEAR				
	1	2	3	4	5
MALE	1902	1866	1868	1863	1832
FEMALE	86	87	87	89	90

PERCENTAGE TABLE BASED ON COLUMN SUMS

	YEAR				
	1	2	3	4	5
MALE	95.7	95.5	95.5	95.4	95.3
FEMALE	4.3	4.5	4.5	4.6	4.7
	100.0	100.0	100.0	100.0	100.0

RACE	YEAR				
	1	2	3	4	5
WHITE	1462	1421	1422	1402	1373
BLACK	313	302	304	315	313
INDIAN	149	149	147	155	153
MEXICAN	12	7	2	1	6
OTHER	1	1	0	0	0

PERCENTAGE TABLE BASED ON COLUMN SUMS

	YEAR				
	1	2	3	4	5
WHITE	75.5	75.6	75.8	74.9	74.4
BLACK	16.2	16.1	16.2	16.8	17.0
INDIAN	7.7	7.9	7.8	8.3	8.3
MEXICAN	.6	.4	.1	.1	.3
OTHER	.1	.1	0	0	0
	100.0	100.0	100.0	100.0	100.0

AGE	YEAR				
	1	2	3	4	5
14-20 YRS	357	293	297	296	293
21-23 YRS	402	382	376	350	369
24-29 YRS	539	548	540	550	534
30-35 YRS	295	311	328	332	316
36-42 YRS	185	207	223	232	230
43+ YRS	185	197	184	186	176

PERCENTAGE TABLE BASED ON COLUMN SUMS

	YEAR				
	1	2	3	4	5
14-20 YRS	18.2	15.1	15.2	15.2	15.3
21-23 YRS	20.5	19.7	19.3	18.0	19.2
24-29 YRS	27.5	28.3	27.7	28.3	27.8
30-35 YRS	15.0	16.0	16.8	17.1	16.5
36-42 YRS	9.4	10.7	11.4	11.9	12.0
43+ YRS	9.4	10.2	9.4	9.6	9.2
	100.0	100.0	100.0	100.0	100.0

OFFENSE	YEAR				
	1	2	3	4	5
HOMICIDE	278	300	313	336	339
OTHER PERS	622	640	664	674	672
SEX	292	318	337	329	330
DRUGS	73	69	62	63	61
ARSON	16	17	16	17	17
PROPERTY	605	516	487	460	434
OBSTR JUST	49	48	48	42	41
MISC	35	32	25	28	26

PERCENTAGE TABLE BASED ON COLUMN SUMS

	YEAR				
	1	2	3	4	5
HOMICIDE	14.1	15.5	16.0	17.2	17.7
OTHER PERS	31.6	33.0	34.0	34.6	35.0
SEX	14.8	16.4	17.3	16.9	17.2
DRUGS	3.7	3.6	3.2	3.2	3.2
ARSON	.8	.9	.8	.9	.9
PROPERTY	30.7	26.6	24.9	23.6	22.6
OBSTR JUST	2.5	2.5	2.5	2.2	2.1
MISC	1.8	1.6	1.3	1.4	1.4
	100.0	100.0	100.0	100.0	100.0

LENGTH	YEAR				
	1	2	3	4	5
0-1 YRS	273	278	277	271	269
1-2 YRS	609	574	590	587	569
3-5 YRS	721	675	627	597	575
6-10 YRS	251	284	314	346	358
11-20 YRS	97	104	111	116	116
21+ YRS	35	34	34	34	33

PERCENTAGE TABLE BASED ON COLUMN SUMS

	YEAR				
	1	2	3	4	5
0-1 YRS	13.7	14.3	14.2	13.9	14.0
1-2 YRS	30.7	29.5	30.2	30.1	29.6
3-5 YRS	36.3	34.6	32.1	30.6	29.9
6-10 YRS	12.6	14.6	16.1	17.7	18.6
11-20 YRS	4.9	5.3	5.7	5.9	6.0
21+ YRS	1.8	1.7	1.7	1.7	1.7
	100.0	100.0	100.0	100.0	100.0

CONS	YEAR									
	1		2		3		4		5	
	CCUR	CSEC								
0-1 YRS	263	0	271	0	272	0	269	0	269	0
1-2 YRS	583	26	660	53	642	79	623	106	593	131
3-5 YRS	786	0	661	0	626	0	582	0	530	0
6-10 YRS	295	7	211	15	190	23	195	30	209	38
11-20 YRS	0	0	0	0	0	0	0	0	0	0
21+ YRS	44	0	88	0	127	0	147	0	151	0

PERCENTAGE TABLE BASED ON COLUMN SUMS

	YEAR									
	1		2		3		4		5	
	CCUR	CSEC								
0-1 YRS	13.3	0	14.3	0	14.6	0	14.8	0	15.4	0
1-2 YRS	29.6	78.8	34.9	77.9	34.6	77.5	34.3	77.9	33.8	77.5
3-5 YRS	39.9	0	35.0	0	33.7	0	32.0	0	30.3	0
6-10 YRS	15.0	21.2	11.2	22.1	10.2	22.5	10.7	22.1	11.9	22.5
11-20 YRS	0	0	0	0	0	0	0	0	0	0
21+ YRS	2.2	0	4.7	0	6.8	0	8.1	0	8.6	0
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

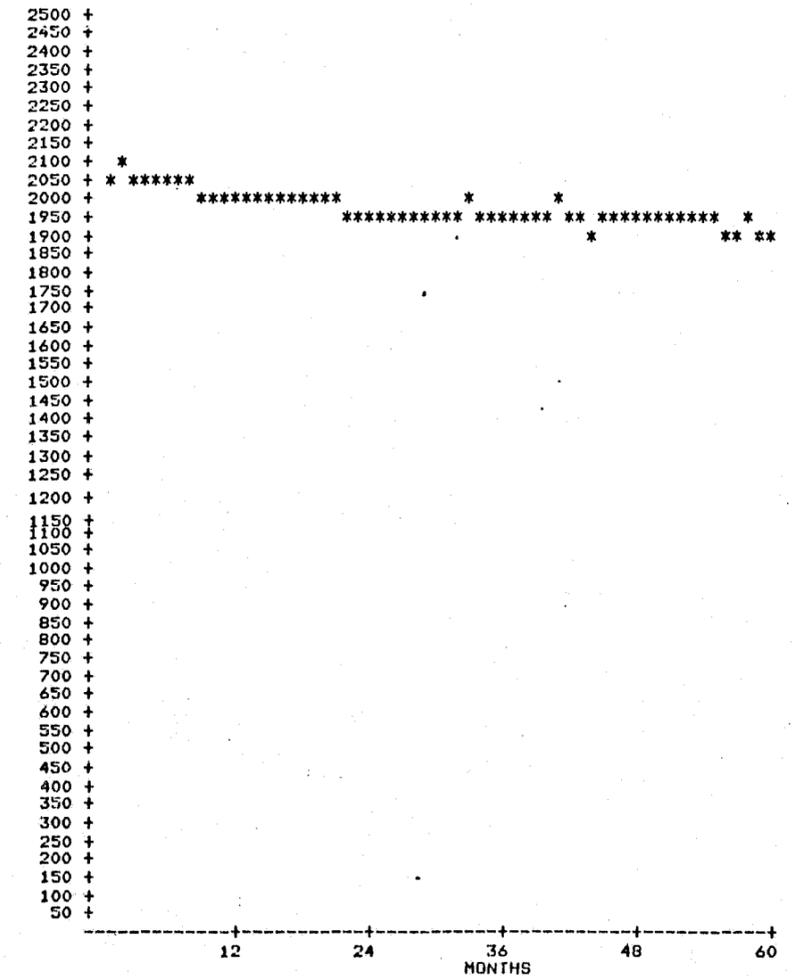
DISTRICT	YEAR				
	1	2	3	4	5
1ST DIST	96	88	80	73	68
2ND DIST	340	376	382	406	410
3RD DIST	112	117	128	124	124
4TH DIST	698	682	673	653	641
5TH DIST	84	84	96	95	91
6TH DIST	122	108	102	100	93
7TH DIST	107	111	103	100	93
8TH DIST	35	31	28	30	28
9TH DIST	129	120	128	128	130
10TH DIST	219	207	216	225	227

PERCENTAGE TABLE BASED ON COLUMN SUMS

	YEAR				
	1	2	3	4	5
1ST DIST	4.9	4.6	4.1	3.8	3.6
2ND DIST	17.5	19.5	19.7	21.0	21.5
3RD DIST	5.8	6.1	6.6	6.4	6.5
4TH DIST	35.9	35.4	34.8	33.8	33.6
5TH DIST	4.3	4.4	5.0	4.9	4.8
6TH DIST	6.3	5.6	5.3	5.2	4.9
7TH DIST	5.5	5.8	5.3	5.2	4.9
8TH DIST	1.8	1.6	1.4	1.6	1.5
9TH DIST	6.6	6.2	6.6	6.6	6.8
10TH DIST	11.3	10.8	11.2	11.6	11.9
	100.0	100.0	100.0	100.0	100.0

YEAR	MONTH											
	1	2	3	4	5	6	7	8	9	10	11	12
1	2045	2077	2065	2057	2062	2038	2028	2032	2013	2006	2003	1989
2	1996	1975	1991	1991	2024	2021	2016	1989	1998	1960	1955	1953
3	1960	1962	1973	1938	1954	1938	1955	1958	1981	1967	1957	1956
4	1954	1947	1974	1970	1977	1956	1938	1921	1948	1945	1926	1952
5	1974	1960	1949	1953	1960	1946	1936	1917	1920	1943	1908	1923

TIME SERIES PLOT OF PROJECTED PRISON POPULATION



IN / OUT PROCESS DATA

NEW COMMITMENTS, NOT INCLUDING THOSE REVOKED FROM PROB OR PAROLE

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	86.	96.	83.	89.	85.	62.	60.	55.	78.	54.	69.	71.	886.	74.
2	84.	71.	82.	69.	112.	74.	69.	53.	78.	73.	71.	80.	916.	76.
3	82.	69.	73.	56.	96.	77.	91.	57.	80.	65.	76.	79.	902.	75.
4	80.	69.	88.	80.	76.	59.	55.	58.	98.	63.	63.	98.	888.	74.
5	99.	55.	81.	76.	74.	64.	52.	65.	80.	87.	61.	81.	875.	73.
AVG =	74.													

NEW COMMITMENTS DUE TO PROBATION REVOCATION

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	12.	8.	9.	8.	11.	11.	9.	11.	11.	8.	10.	8.	115.	10.
2	12.	8.	9.	8.	10.	10.	10.	11.	12.	10.	7.	9.	117.	10.
3	12.	10.	9.	10.	9.	9.	12.	10.	11.	9.	9.	8.	116.	10.
4	11.	12.	10.	9.	8.	10.	12.	10.	10.	9.	7.	8.	116.	10.
5	12.	10.	10.	11.	10.	9.	11.	9.	11.	10.	7.	9.	118.	10.
AVG =	10.													

READMISSIONS DUE TO PAROLE REVOCATION - TECHNICAL

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	21.	18.	24.	22.	19.	17.	18.	25.	27.	26.	21.	20.	257.	21.
2	22.	19.	25.	23.	20.	17.	19.	27.	27.	27.	22.	21.	269.	22.
3	24.	21.	26.	23.	22.	17.	19.	33.	25.	24.	16.	24.	275.	23.
4	21.	23.	24.	26.	24.	22.	21.	31.	22.	28.	23.	27.	292.	24.
5	22.	22.	21.	26.	24.	23.	25.	26.	23.	28.	20.	29.	289.	24.
AVG =	23.													

NUMBER ENTERING WORK RELEASE

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	6.	6.	7.	6.	6.	7.	6.	5.	6.	8.	8.	8.	81.	7.
2	7.	6.	7.	6.	8.	7.	7.	5.	6.	10.	8.	7.	84.	7.
3	7.	5.	6.	7.	7.	8.	7.	7.	6.	9.	7.	8.	85.	7.
4	7.	8.	7.	7.	6.	8.	7.	7.	7.	8.	7.	8.	88.	7.
5	6.	9.	8.	7.	9.	7.	7.	7.	7.	6.	6.	7.	87.	7.
AVG =	7.													

READMISSIONS DUE TO FAILURE ON WORK RELEASE

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	1.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	1.	21.	2.
2	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	1.	23.	2.
3	2.	3.	2.	2.	2.	1.	2.	2.	2.	2.	2.	2.	23.	2.
4	2.	3.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	24.	2.
5	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	24.	2.
AVG =	2.													

MONTHLY ADMISSIONS

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	120.	124.	118.	121.	117.	91.	88.	93.	118.	89.	101.	100.	1280.	107.
2	120.	100.	119.	102.	144.	103.	101.	93.	120.	112.	102.	111.	1325.	110.
3	120.	103.	110.	91.	129.	104.	123.	101.	118.	100.	111.	105.	1317.	110.
4	113.	107.	125.	117.	110.	93.	91.	100.	132.	101.	95.	136.	1320.	110.
5	135.	89.	114.	115.	109.	99.	89.	102.	116.	127.	91.	121.	1306.	109.
AVG =	109.													

MONTHLY RELEASES

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	92.	92.	130.	129.	112.	115.	98.	89.	137.	96.	104.	114.	1308.	109.
2	113.	121.	103.	102.	111.	104.	106.	120.	111.	150.	107.	113.	1361.	113.
3	113.	101.	99.	126.	113.	120.	106.	90.	95.	114.	121.	106.	1314.	109.
4	115.	114.	98.	121.	103.	114.	109.	117.	105.	104.	114.	110.	1324.	110.
5	113.	103.	125.	111.	102.	113.	99.	121.	113.	104.	126.	106.	1335.	111.
AVG =	111.													

DO YOU WANT IN / OUT PROCESS DATA BY SEX AND RACE ? YES

IN / OUT PROCESS DATA FOR SEX AND RACE

NEW COMMITMENTS, NOT INCLUDING THOSE REVOKED FROM PROB OR PAROLE.

VARIABLE = SEX, VALUE = MALE

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	82.	92.	74.	86.	81.	58.	57.	53.	71.	50.	65.	65.	836.	70.
2	79.	67.	78.	64.	107.	69.	66.	48.	71.	70.	67.	77.	863.	72.
3	76.	66.	70.	53.	91.	74.	87.	54.	77.	59.	73.	73.	850.	71.
4	73.	68.	84.	76.	70.	53.	52.	56.	94.	59.	59.	94.	837.	70.
5	93.	53.	77.	72.	69.	62.	47.	60.	76.	81.	58.	77.	825.	69.
AVG =	70.													

VARIABLE = SEX, VALUE = FEMALE

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	4.	4.	9.	3.	4.	4.	3.	2.	7.	4.	3.	5.	51.	4.
2	5.	4.	4.	5.	5.	5.	3.	5.	7.	3.	4.	3.	53.	4.
3	6.	4.	4.	4.	5.	3.	4.	3.	3.	6.	4.	7.	52.	4.
4	6.	2.	4.	4.	5.	6.	3.	2.	4.	4.	5.	4.	51.	4.
5	6.	2.	4.	4.	5.	2.	5.	5.	4.	6.	3.	3.	50.	4.
AVG =	4.													

VARIABLE = RACE, VALUE = WHITE

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	69.	77.	58.	63.	69.	48.	43.	46.	49.	44.	48.	59.	672.	56.
2	55.	57.	56.	51.	92.	55.	47.	39.	62.	59.	65.	65.	694.	58.
3	57.	64.	47.	44.	76.	52.	67.	41.	65.	53.	58.	59.	683.	57.
4	66.	58.	69.	60.	54.	43.	44.	45.	72.	44.	51.	68.	673.	56.
5	80.	36.	60.	61.	58.	48.	42.	41.	61.	67.	58.	61.	663.	55.
AVG =	56.													

VARIABLE = RACE, VALUE = BLACK

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	13.	10.	17.	9.	6.	4.	10.	4.	21.	2.	10.	5.	112.	9.
2	13.	5.	14.	11.	11.	8.	14.	7.	11.	9.	7.	4.	115.	10.
3	13.	3.	11.	4.	8.	15.	15.	6.	11.	5.	10.	12.	114.	9.
4	2.	6.	15.	11.	16.	8.	4.	5.	15.	8.	7.	15.	112.	9.
5	11.	12.	10.	6.	7.	9.	8.	12.	10.	10.	1.	13.	110.	9.
AVG =	9.													

VARIABLE = RACE, VALUE = OTHER

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	2.	8.	8.	9.	6.	4.	6.	3.	5.	4.	5.	3.	63.	5.
2	7.	7.	6.	4.	6.	5.	4.	4.	4.	2.	7.	9.	65.	5.
3	4.	2.	10.	3.	9.	8.	4.	7.	2.	4.	6.	4.	64.	5.
4	6.	3.	3.	5.	4.	6.	3.	6.	6.	10.	2.	9.	63.	5.
5	4.	2.	8.	7.	6.	6.	2.	7.	6.	7.	5.	2.	62.	5.
AVG =	5.													

READMISSIONS DUE TO PAROLE REVOCATION - TECHNICAL

VARIABLE = SEX, VALUE = MALE

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	19.	17.	23.	20.	19.	15.	17.	24.	25.	24.	20.	19.	242.	20.
2	20.	18.	24.	21.	19.	16.	18.	25.	26.	25.	21.	20.	254.	21.
3	23.	20.	25.	21.	21.	15.	18.	31.	23.	22.	15.	20.	258.	22.
4	19.	21.	23.	25.	23.	21.	20.	29.	21.	26.	22.	26.	275.	23.
5	21.	22.	20.	25.	22.	21.	24.	25.	21.	26.	18.	28.	273.	23.
AVG =	22.													

VARIABLE = SEX, VALUE = FEMALE

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	2.	1.	1.	2.	1.	1.	1.	1.	1.	1.	1.	1.	15.	1.
2	2.	1.	1.	2.	1.	1.	1.	2.	1.	1.	1.	1.	16.	1.
3	2.	1.	1.	2.	1.	1.	1.	2.	1.	2.	2.	1.	17.	1.
4	2.	2.	1.	1.	1.	1.	1.	2.	2.	2.	1.	2.	17.	1.
5	2.	1.	1.	1.	1.	2.	1.	2.	2.	1.	2.	1.	16.	1.
AVG =	1.													

VARIABLE = RACE, VALUE = WHITE

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	16.	15.	17.	16.	15.	14.	15.	19.	21.	18.	16.	16.	197.	16.
2	17.	15.	18.	17.	15.	15.	16.	20.	21.	18.	17.	16.	206.	17.
3	19.	17.	19.	16.	18.	15.	16.	23.	19.	16.	18.	13.	209.	17.
4	17.	18.	17.	19.	20.	17.	17.	23.	17.	18.	17.	20.	220.	18.
5	19.	19.	16.	18.	20.	18.	20.	20.	18.	20.	14.	23.	226.	19.
AVG =	18.													

VARIABLE = RACE, VALUE = BLACK

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	1.	2.	4.	4.	2.	1.	1.	4.	2.	6.	2.	3.	31.	3.
2	1.	2.	4.	4.	2.	1.	1.	4.	2.	6.	2.	3.	32.	3.
3	2.	2.	4.	5.	2.	1.	1.	6.	1.	5.	3.	3.	34.	3.
4	1.	3.	3.	4.	2.	2.	1.	5.	2.	5.	3.	3.	34.	3.
5	2.	2.	2.	5.	2.	2.	2.	6.	3.	4.	4.	2.	34.	3.
AVG =	3.													

VARIABLE = RACE, VALUE = OTHER

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	3.	1.	2.	1.	1.	1.	1.	0.	3.	1.	2.	1.	17.	1.
2	3.	1.	2.	1.	1.	1.	1.	0.	3.	2.	2.	1.	18.	2.
3	3.	1.	2.	2.	1.	1.	1.	0.	3.	2.	2.	1.	18.	2.
4	3.	2.	3.	2.	1.	1.	2.	1.	2.	4.	2.	2.	23.	2.
5	2.	1.	2.	1.	0.	1.	1.	1.	2.	3.	1.	3.	17.	1.
AVG =	2.													

MONTHLY ADMISSIONS

VARIABLE = SEX, VALUE = MALE

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	113.	118.	108.	116.	111.	86.	83.	88.	109.	84.	95.	92.	1202.	100.
2	111.	94.	113.	94.	137.	96.	95.	85.	111.	106.	96.	107.	1245.	104.
3	112.	97.	104.	85.	122.	98.	117.	95.	112.	91.	105.	97.	1236.	103.
4	103.	102.	118.	111.	102.	85.	85.	96.	125.	94.	89.	129.	1240.	103.
5	124.	85.	108.	110.	101.	94.	82.	95.	108.	119.	85.	116.	1229.	102.
AVG =	103.													

VARIABLE = SEX, VALUE = FEMALE

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	6.	6.	11.	6.	5.	6.	5.	5.	9.	6.	5.	7.	77.	6.
2	8.	6.	6.	8.	6.	6.	8.	5.	8.	6.	6.	4.	80.	7.
3	8.	6.	6.	6.	7.	5.	6.	6.	6.	9.	6.	9.	80.	7.
4	9.	5.	7.	6.	8.	8.	5.	7.	7.	6.	7.	6.	80.	7.
5	9.	4.	6.	6.	7.	5.	7.	8.	8.	8.	6.	5.	77.	6.
AVG =	7.													

VARIABLE = RACE, VALUE = WHITE

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	95.	100.	85.	87.	94.	73.	66.	75.	80.	70.	72.	82.	979.	82.
2	83.	81.	84.	75.	117.	79.	74.	70.	95.	87.	80.	90.	1014.	85.
3	87.	91.	74.	70.	103.	76.	95.	74.	95.	77.	85.	79.	1005.	84.
4	93.	87.	96.	88.	82.	71.	72.	78.	98.	70.	76.	97.	1007.	84.
5	110.	65.	86.	89.	87.	77.	72.	71.	89.	96.	69.	92.	1004.	84.
AVG =	83.													

VARIABLE = RACE, VALUE = BLACK

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	15.	13.	21.	14.	9.	6.	11.	9.	23.	9.	14.	9.	153.	13.
2	15.	8.	18.	17.	15.	11.	15.	12.	13.	17.	10.	7.	157.	13.
3	16.	6.	16.	10.	10.	16.	17.	12.	14.	11.	14.	16.	159.	13.
4	3.	10.	19.	16.	19.	10.	7.	10.	18.	14.	11.	19.	156.	13.
5	14.	14.	13.	12.	11.	11.	12.	19.	14.	14.	6.	16.	155.	13.
AVG =	13.													

VARIABLE = RACE, VALUE = OTHER

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	6.	9.	10.	11.	8.	6.	9.	3.	10.	5.	8.	4.	89.	7.
2	10.	8.	9.	6.	9.	7.	6.	5.	8.	4.	10.	10.	92.	8.
3	7.	4.	13.	6.	11.	9.	6.	8.	6.	7.	8.	6.	91.	8.
4	10.	6.	7.	7.	5.	7.	5.	8.	9.	14.	4.	12.	95.	8.
5	7.	3.	10.	9.	7.	8.	3.	9.	9.	10.	7.	5.	88.	7.
AVG =	8.													

MONTHLY RELEASES

VARIABLE = SEX, VALUE = MALE

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	89.	88.	121.	119.	105.	110.	93.	82.	130.	92.	98.	108.	1234.	103.
2	104.	114.	97.	96.	105.	100.	100.	114.	105.	141.	101.	104.	1281.	107.
3	106.	96.	92.	119.	105.	113.	98.	93.	89.	106.	115.	101.	1234.	103.
4	106.	109.	92.	113.	96.	104.	105.	111.	97.	99.	108.	104.	1245.	104.
5	104.	98.	120.	105.	94.	107.	91.	117.	107.	98.	120.	99.	1260.	105.
AVG =	104.													

VARIABLE = SEX, VALUE = FEMALE

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	3.	5.	9.	11.	6.	6.	5.	8.	7.	5.	4.	6.	75.	6.
2	7.	7.	7.	6.	5.	6.	5.	6.	6.	9.	6.	9.	79.	7.
3	8.	5.	6.	8.	8.	6.	8.	5.	6.	7.	7.	6.	80.	7.
4	7.	6.	5.	8.	7.	10.	4.	7.	8.	4.	7.	5.	78.	7.
5	9.	6.	4.	7.	7.	7.	7.	6.	5.	7.	6.	7.	76.	6.
AVG =	6.													

VARIABLE = RACE, VALUE = WHITE

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	67.	76.	101.	106.	84.	87.	79.	67.	106.	78.	82.	91.	1024.	85.
2	83.	94.	82.	82.	89.	80.	83.	90.	88.	113.	84.	88.	1055.	88.
3	88.	83.	78.	99.	89.	82.	75.	77.	77.	85.	90.	82.	1004.	84.
4	91.	90.	80.	94.	80.	79.	83.	87.	85.	86.	89.	84.	1027.	86.
5	85.	85.	97.	87.	85.	85.	72.	97.	91.	75.	91.	82.	1033.	86.
AVG =	86.													

VARIABLE = RACE, VALUE = BLACK

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	16.	11.	16.	10.	17.	13.	14.	12.	17.	11.	10.	11.	158.	13.
2	16.	17.	10.	12.	13.	14.	15.	15.	13.	19.	12.	13.	168.	14.
3	16.	8.	11.	16.	8.	23.	17.	11.	5.	12.	16.	13.	157.	13.
4	12.	12.	8.	13.	8.	17.	15.	15.	10.	8.	13.	14.	145.	12.
5	16.	10.	14.	17.	9.	13.	14.	13.	8.	15.	16.	13.	157.	13.
AVG =	13.													

VARIABLE = RACE, VALUE = OTHER

YEAR	MONTH												YR TOTALS	ANNUAL AVERAGE
	1	2	3	4	5	6	7	8	9	10	11	12		
1	10.	4.	14.	11.	9.	13.	6.	8.	13.	3.	8.	11.	110.	9.
2	9.	8.	9.	7.	7.	9.	7.	9.	6.	15.	4.	7.	97.	8.
3	7.	7.	6.	8.	11.	7.	8.	5.	12.	11.	9.	8.	99.	8.
4	6.	5.	8.	5.	10.	13.	6.	7.	7.	8.	6.	6.	88.	7.
5	5.	6.	9.	5.	4.	11.	5.	8.	8.	9.	8.	6.	85.	7.
AVG =	8.													

ACTION (RESET,BREAKS,SIMULATE,END)  
? END

END SIMULATION

\*END\*

**END**