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FLORIDA
DEPARTMENT OF CORRECTIONS

Research Report

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Bureau of Planning, Research & Statistics

FLORIDA

INMATE POPULATION PROJECTIONS

SLAM - PHASE II

November 16, 1978

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APPENDICES

ACKNOWLEDGEMENTS

The Department of Corrections acknowledges the contribution of the staff of the Bureau of Planning, Research and Statistics in the development of the SLAM methodology.

It should be noted that the technical method presented herein, used to generate the incarceration probability functions, represents what is believed to be a totally new mathematical application. This technique was developed by Carl Sikkema, PHD.

The SLAM concept design and methodology implementation is the direct result of joint effort and collaboration of Dr. Sikkema and Lonnie Fouty of this Department at the direction of Robert Roesch, Chief of the Bureau of Planning, Research and Statistics.

INTRODUCTION

In July, 1977, the Department published a research report entitled, Inmate Population Projections; Short and Long-Range Estimates (1977 to 1980 and 1977 to 2000). This report presented a methodology for developing forecasts of growth or decline of the Florida inmate population using a computer-based, input/output model known as Simulated Losses/Admissions Model (SLAM) - Phase I.

Like all human predictions, based on the assumption that past events bear some relationship to future outcomes, the estimates produced were subject to error. That average error, over the first twelve months since the estimates were published, proved to be within 1.4% of the average actual end-of-month inmate population.

During this same period, the staff of the Bureau of Planning, Research and Statistics monitored the monthly components of the projection. This monthly comparison of predicted and actual admissions and releases yielded some rather surprising results that have led to the enhancement of the orignal model. These enhancements are expected to improve both the relative accuracy of, and the degree of confidence that may be placed in, the forecasts generated by the model.

This report is a presentation of the revised methodology for developing estimates of future inmate population levels

for the Florida Department of Corrections. To distinguish this method from that used last year, the computer-based technique presented herein will be referred to as SLAM-Phase II.

This document does not replace the Phase I report published last year, for that document presented much of the logic and considerable historical data upon which this report is based. The reader will note, in comparing this year's revised forecasts with those published over a year ago, that the short-range growth projected by both Phase I and Phase II is not significantly different even though the rate of release in the new projections has been accelerated. This is attributed to anticipated delays in certain releases caused by changes in the award of discretionary gain-time. These delayed releases are the result of new gain-time statutes enacted during the last legislative session and they serve to compensate for projection errors in the release rate of the Phase I forecast. The similarity of the two projections may also be attributed, in part, to relatively minor changes in the predicted rates of growth in the estimated male population of the state (aged 18-29), unemployment and the resulting rate of prison admission published a year ago.

The long-range forecasts published this year are significantly different than those developed with Phase I. This is the result of incorporating an estimate of unemployment beyond three years to provide a more realistic forecast of the growth of the inmate population by the year 2000. A

figure of average annual unemployment (7.0%), reflecting the 6 year historical average of the State, was used to generate the long-range forecasts presented in this report.

This report also differs from its predecessor insofar as it presents forecasts for both the population in custody ("admitted population", either in Departmental facilities or in local contract jail beds paid for by the Department) and the total population sentenced to prison by the circuit courts, whether admitted or awaiting transfer to the Department's Reception Center. The difference in these two forecasts represents the backlog of sentenced offenders held in local jail facilities awaiting transfer to state intake facilities.

The first section of this report presents a detailed analysis of the SLAM-Phase I projections. This analysis is based upon the month-by-month monitoring by the Bureau of Planning, Research and Statistics staff done over the past year to validate the projections. Included is a brief comparison of past projections published by the Department of Corrections based upon a number of statistical methods leading to SLAM-Phase I and SLAM-Phase II.

The following section provides a general description of SLAM-Phase II. The primary difference between this and other models and methods previously used by the Department is the use of "probability functions". These functions were developed to determine the most likely dates of release of offenders

within 14 length-of-sentence categories. They are based upon the amount of time served to date by persons not yet released as well as the time served by those who have been released over a three-year period covering FY 1974-75 through FY 1976-77.

A complete set of the probability function values used to generate the Phase II projections is found in Appendix C. These tables and graphs should be beneficial in answering questions related to how much time an offender is likely to remain in prison under current sentencing statutes and practices in the State of Florida.

Following the general description of the SLAM-II methodology, there is a section of the report that discusses the application of this methodology in the development of the actual inmate population forecasts presented in Tables 7 and 8 (short-range projections; FY 1977-78 through FY 1982-83), on pages 26 & 27, and Table 9 (long-range projections, FY 1977-78 through FY 1999-2000), on page 27.

At the end of this report are four Appendices. Appendix A contains a technical description of the SLAM II computer program as well as a copy of the actual FORTRAN program used to generate the incarceration probability functions that are included in Appendix C.

Appendix B, contains a copy of the FORTRAN program used to generate the projected releases and to compute the inmate population forecast.

Appendix D presents data tables related to variables considered in the SLAM-II methodology.

ANALYSIS OF SLAM-PHASE I PROJECTIONS

The following table represents a comparison of the end-of-month projections (including jail backlog and contract jail beds) generated by the SLAM-Phase I Model (July, 1977) and the actual end-of-month population as reported in the Departments Monthly Management Report. The last column of the table is an adjustment made to subtract the starting error (116) in order to determine the actual magnitude of error from a starting point of "0". (It should be noted that the projection shown in Table 1 "started" on July 1, 1973, and the predicted inmate population on June 30, 1977, proved to be in error by 116. If the rate of additional error for the twelve months shown is to be examined, we must start at "0" by subtracting 116 from each of the subsequent errors.)

TABLE 1

POPULATION FY 1977-78

DATE	PROJECTED	ACTUAL	PROJECTED OVER OR (UNDER)	OVER OR (UNDER) LESS 116
6/77	19,650	19,534	116	
7/77	19,682	19,612	70	(46)
8/77	19,828	19,558	270	154
9/77	19,558	19,315	243	127
10/77	19,958	19,573	385	269
11/77	20,048	19,748	300	184
12/77	20,122	19,643	108	(8)
1/78	20,072	19,751	321	205
2/78	20,122	19,897	225	109
3/78	19,914	19,676	238	122
4/78	20,386	19,990	396	280
5/78	20,477	20,069	408	292
6/78	20,465	20,142	323	207

The June 30, 1978, projection was 1.6% in error and the average error for the twelve months of FY 1977-78 was 1.4%.

Table 2 compares the forecasted admissions with the actual admissions for the fiscal year.

TABLE 2

ADMISSIONS FY 1977-78

DATE	PROJECTED	ACTUAL	OVER OR (UNDER)	CUM. OVER OR (UNDER)
7/77	587	590	(3)	(3)
8/77	703	705	(2)	(5)
9/77	555	698	(143)	(148)
10/77	714	584	130	(18)
11/77	615	715	(100)	(118)
12/77	559	643	(84)	(202)
1/78	630	552	78	(124)
2/78	669	625	44	(80)
3/78	680	780	(100)	(180)
4/78	791	699	92	(88)
5/78	660	711	(51)	(139)
6/78	806	699	107	(32)
TOTAL	7969	8001		

The 8001 admissions for FY 1977-78 were 32 over the number projected. This represents an error of only 0.4%. However, it should be remembered that the number of contract jail beds was reduced during the fiscal year so that there were about 200 offenders counted as admissions who were already in the jail backlog. If these offenders removed from the courts had not been included in the count, the actual admissions would have been overpredicted by 2.2%. Since the error in projecting admissions using a multiple regression model could be even

greater than this in the future, it is assumed that the short range forecasting of admissions would be more reliable if data regarding case filing and dispositions from the court system were available.

Table 3 shows the monthly losses from the inmate population compared with those projected. (Losses include releases and other net losses due to temporary absences, deaths, court vacated sentences, etc.)

TABLE 3

LOSSES FY 1977-78

DATE	PROJECTED	ACTUAL	OVER OR (UNDER)	CUM. OVER OR (UNDER)
7/77	555	512	43	43
8/77	557	759	(202)	(159)
9/77	825	941	(116)	(275)
10/77	314	326	(12)	(287)
11/77	525	540	(15)	(302)
12/77	856	748	108	(194)
1/78	309	444	(135)	(329)
2/78	619	479	140	(189)
3/78	888	1001	(113)	(302)
4/78	319	385	(66)	(368)
5/78	569	632	(63)	(431)
6/78	818	626	192	(239)
TOTAL	7154	7393		

The 7393 losses were 239 over the number projected for FY 1977-78, representing an error of 3.2%. Inmates due for release in a given month by Expiration of Sentence or Mandatory Conditional Release are currently released on the first working day of the month. Over the period of this analysis, whenever the first calendar day of the month fell on a weekend or a holiday, this release was made on the last working day

of the previous month. If the inmates who were scheduled for release on July 1, which was a Saturday, had been counted in June (as the simulation model was programmed) then there would have been an additional 299 releases and the error in forecasting releases would have been 7.0%.

Moreover, if the counting had not been adjusted at the end of the year, the population forecast based upon SLAM-Phase I, would have overprojected the actual population by about 600 for a 3.0% error. The forecasted admissions were very accurate and actually offset the error in releases by a very small amount. Therefore, the emphasis in developing Phase II has been to improve the projection of inmate losses.

There were several possible sources of error in the Phase I methodology that contributed to the underprediction of releases. Calibration of the Model's output was accomplished using adjustment factors to achieve the "best fit" when compared with actual data over the 4-year period. The resulting release distributions for each length-of-sentence category required adjustment and did not necessarily reflect current or future release patterns. The use of random numbers caused some random error. There were also some technical problems with the program (not known at the time the projections were published) that introduced some rounding errors. Lack of data on inmates on temporary absence status made it difficult to accurately simulate the actual losses. In spite of these problems, the SLAM-Phase I projections have proved to be remarkably accurate.

COMPARISON OF SLAM-PHASE I WITH EARLIER PROJECTIONS

There have been eight population methodologies examined that produced projections published by the Department during the four years preceding the development of Phase I of SLAM. Six of these were linear projections, one was quadratic and another used a log transformation. These published projections are summarized in Table 4 on the following page. In addition several other projections were considered but were rejected in favor of those included in Table 4.

Generally, the projection was made at the beginning of the fiscal year was replaced when it became evident that there was a significant error. The second projection made during FY 1973-74 was only in error by 2.2% at the end of that fiscal year but both were at least 17.5% in error by the end of the next fiscal year. The population rose so rapidly during FY 1974-75 that three projections were published and all were in error by more than 10% by the end of the fiscal year. During FY 1975-76 just one projection was published and the error was only 2.6%. The relative accuracy of that projection is attributed to the fact that the net gain that year was nearly equal to that of the previous year. However, the error was greater than 5% by the end of the second fiscal year and over 15% by the end of the third fiscal year. Two projections were published during FY 1976-77, the revised projection being 2.9% in error by the end of the fiscal year and more than 12% in error by the end of the second fiscal year. It is improtant to ntoe that the purpose of Table

TABLE 4

INMATE POPULATION PROJECTIONS PUBLISHED BY THE DEPARTMENT OF CORRECTIONS
(1972-1978)

		LINEAR REGRESSION		LOG TRANSFORMATION (ADJUSTED)	NET GAIN	QUADRATIC EQUASION (ADJUSTED)	NET GAIN EXTRAPOLATION (ADJUSTED)		LINEAR REGRESSION	SLAM PHASE I	SLAM PHASE II
PROJECTION YEAR \ PUBLICATION DATE		10/2/73	ATTACHMENT B	8/30/74	1/14/75	4/30/75	8/12/75	7/30/76	9/16/76	7/27/77	8/7/78
	ACTUAL[1]	PROJECTED[2]	PROJECTED[3]	PROJECTED[4]	PROJECTED[5]	PROJECTED[6]	PROJECTED[7]	PROJECTED[8]	PROJECTED[9]	PROJECTED[10]	PROJECTED[11]
Fy 1972-73	10,669										
	% Error										
FY 1973-74	11,744	10,801	11,091								
	% Error	(4.7%)	(2.2%)								
FY 1974-75	14,637	11,186	11,660	12,200	12,359	13,035					
	% Error	(20.8%)	(17.5%)	(16.7%)	(15.6%)	(10.9%)					
FY 1975-76	17,531			12,794		14,186	17,991				
	% Error			(27.0%)		(19.1%)	+2.6%				
FY 1976-77	19,534			13,419		16,616	20,619	20,567	20,094		
	% Error			(31.3%)		(14.9%)	+5.6%	+5.3%	+2.9%		
FY 1977-78	20,142			14,076		18,448	23,247		22,734	20,465	
	% Error			(30.1%)		(8.4%)	+15.4%		+12.0%	1.6%	
FY 1978-79				14,766		21,373	25,875		25,373	21,118	20,685
FY 1979-80				15,492		24,222			28,013	22,155	21,236
FY 1980-81											21,943
FY 1981-82											23,007
FY 1982-83											23,920

[1]Actual population includes Contract Jail Beds (CJB) and Estimated Jail Backlog (EJB)
[2]Linear regression on 24 month data base without estimated jail backlog, 7/71-6/73
[3]Linear regression on 48 month data base without estimated jail backlog, 1/69-12/72
[4]Regression on log transformation of 48 month data base, 7/70-6/74, adjusted upward by 300 for the jail backlog
[5]A quadratic curve was fitted to 48 months of weighted data with contract jail beds and estimated jail backlog and was adjusted with the addition of a sine function

[6]Linear projection based as net gain for FY 1973-74
[7]The 6/30/76 projection was based on the net gain for FY 1974-75 plus 20% for increase in crime. The other projections was based on the average net gain over 18 months, 1/74-6/75
[8]Based on the average net gain over 12 months 7/75-6/76
[9]Linear regression on 12 month data base with contract jail beds and estimated jail backlog, 7/75-6/76
[10]SLAM, Phase 1 with contract jail beds and estimated jail backlog
[11]SLAM, Phase II with contract jail beds but without estimated jail backlog

4 is not to critically imply that the SLAM methodology (Phase I or II) is necessarily "better" than the other methods used by the Department inasmuch as no method can guarantee predictions of the future ... there are no "crystal balls". SLAM is simply a more advanced method of simulating the behavior of the Florida corrections system and is more sensitive to factors that influence growth or decline of the inmate population. Secondly, the SLAM projections should be better long-range and short-range indicators inasmuch as adjustments need to be made only when changes occur in critical independent variables that are determined to cause changes in the inmate population. A projection that needs major revision or adjustment every month, or every six months because of changing data would obviously not be sufficient to enable budgetary planning or management decisions that have implications beyond the current fiscal year. The budget cycle for fixed capital outlay, for instance, requires reasonably accurate forecasts covering a period of at least three years. Given the required lead-time for construction, an underprediction of any magnitude would have serious implications with respect to overcrowding and potential for violence within institutions.

All of the previously published methods involve fitting a curve to historical data (usually in a linear fashion). During three of the four years, shown in Table 4, the population curve was turning upward or downward and the projected trend line did not accurately predict this change. This made it necessary to adjust the population projection during the year. Only

during one year of stable growth was the projection reasonably accurate without updating, and even then there was a large error after three years.

The population curve continued to turn during FY 1976-77 as the growth rate of the inmate population slowed down considerably. A projection based on any form of linear regression would have been at least 6% in error. However, Phase I of SLAM predicted that the growth rate would decline. Moreover, the Phase II projections indicate that the error is not likely to increase at the end of the second or third fiscal years from the date of the SLAM-Phase I publication.

In summary, it can be concluded that Phase I of SLAM predicted the slow down in the growth of the inmate population and the prediction of the population was reasonably accurate. Phase II enhancements refine the Phase I estimate and barring unforseen policy changes, present the most reliable projections developed by the Department to date.

The following section will discuss the enhancements made to the Phase I model and describe the new methods of Phase II that have been used to eliminate problems identified in this analysis.

GENERAL DESCRIPTION OF THE SLAM PHASE II COMPUTER PROGRAM

As in Phase I, admissions have been projected using multiple regression on the Population at Risk (Figure 1, Page 17, shows predicted number of males in Florida, aged 18-29) and the Florida unemployment rate. (Figure 2, page 18, shows estimated unemployment). In Phase II, the first part of the release module computer program has been designed to produce a series of probability functions for each of fourteen length-of-sentence classes replacing the release frequency distributions used in Phase I. These incarceration probability functions represent the probability that an offender will remain incarcerated at the end of each month over the period of his sentence. The length-of-sentence classes used in Phase I have been expanded in order to better distinguish the shorter sentences. Table 5 (on the following page) shows the Phase II length-of-sentence classes (note that there is an additional class, death, that does not require a probability function at this time since no inmate has been executed during the last five years).

The primary purpose for changing from release rates based upon frequency distributions to incarceration probability functions was to avoid selecting random release dates and thereby eliminating random error.

TABLE 5

LENGTH-OF-SENTENCES CLASSES

CLASS	
1	Less than 1
2	Equal to 1
3	Greater than 1 and less than 2
4	Equal to 2
5	Greater than 2 and less than 3
6	Equal to 3
7	Greater than 3 and less than 5
8	Equal to 5
9	Greater than 5 and less than 10
10	Equal to 10
11	Greater than 10 and less than or equal to 15
12	Greater than 15 and less than or equal to 20
13	Greater than 20
14	Life
**	Death

Probability functions can be generated directly from release data alone. However, such probabilities are not likely to represent the actual probability of remaining incarcerated for those who have not yet been released or for those currently admitted. This may be understood when the method of computing probabilities is examined in light of increasing annual admissions. The probability of remaining in prison after a certain number of months may be computed by dividing:

THE TOTAL NUMBER RELEASED AFTER X NUMBER OF MONTHS
OUT OF A SET OF INMATES ADMITTED WITHIN EACH SENTENCE
CLASS DURING A COMMON TIME PERIOD

BY

THE TOTAL NUMBER OF INMATES WITHIN EACH SENTENCE CLASS
ADMITTED DURING THE SAME COMMON TIME PERIOD

The source data for this computation, (release tapes available to the Department convering only a period from FY 1974-75 through Fy 1976-77) are not sufficient to determine the total number in each sentence class who were admitted in any given time period. This is due to the absence of data on individuals released prior to FY 1974-75. However, the total number of admissions for years prior to FY 1974-75 is known from manual sources. These total admissions were used to compute relative weight factors that, when applied to the source data, adjust for varying rates of annual admission and thereby compensate for limitations in the source data. The weight factors are the same as those used in Phase I (see Table 3 on page 27 of the SLAM-Phase I document).

An additional problem encountered in developing representative probabilities, based only upon release data, relates to the fact that the time served by those released to date may not represent the time that is likely to be served by those not yet released. This is particularly true of those inmates serving relatively long sentences.

In Phase I, adjustment factors were empirically determined so that there was a close fit when the predicted inmate population was compared to the actual inmate population over the four year simulation period. The factors used in Phase I allowed adjustment of the release distributions of offenders released to more closely reflect the rate of release expected for those not yet released. These factors increased the means

and standard deviations of the release frequency distributions, but did not alter the shape of the graphs of those distributions.

In Phase II, a new method has been used in determining incarceration probability functions that did not require the use of adjustment factors. These probability functions, without adjustment, generated a population projection that actually gave a better fit over the simulation period then that developed in Phase I. These probability functions were based upon the data for all of the inmates released from prison as well as those still in prison during the three fiscal years from 1974 to 1977. The incarceration probability functions used in Phase II differ with respect to the average length of time served as well as in the shape of the graphs from both the unadjusted release distributions and the adjusted release distributions used in Phase I. These differences were particularly significant for the longer sentences.

A technical description of the method of computing the incarceration probability functions is contained in Appendix A. The FORTRAN program used to generate the probability functions may also be found there. The Phase II probability functions and their graphs are contained in Appendix C.

The second part of the PHASE-II Program predicts monthly releases and the inmate population. The June 30, 1973, computer status tape and the admission tapes for FY 1973-74 through FY 1976-77, were used as the data base for the simulation.

For each inmate admitted to prison after June 30, 1973, the incarceration probability function is selected that corresponds to the inmate's length of sentence. The admissions for the month of his admission are incremented by one and the population for each month after his admission is incremented by the probability that he will still be in prison, as determined by the incarceration probability function.

For inmates already in prison on June 30, 1973, the probability function was adjusted to a conditional probability function and this adjusted probability was used after that date. For inmates with mandatory minimum requirements, a similar adjustment was made.

The monthly admissions and the subsequent population counts were calculated separately for the beginning status population and the groups admitted for each of four years (FY 1973-74 through FY 1976-77). For FY 1977-78, the monthly admissions and population for FY 1976-77 were advanced a year and then multiplied by the ratio of the number of admissions in FY 1977-78 divided by the number of admissions in FY. 1976-77. Projected admissions are handled in a similar manner.

The monthly populations are combined by the program and releases are computed. Phase II monthly releases have been adjusted to reflect the policy decision made to terminate early releases in accordance with the new gain time law. The resulting inmate population projection has been adjusted to reflect these changes in the releases.

In Phase I, releases due to expiration of sentence and mandatory conditional release were adjusted to account for the end-of-month distortion that resulted when the first calendar day of the month fell on a weekend or holiday. Since the Department's policy has now been modified to accomplish the release of inmates scheduled during that month for Mandatory Conditional Release or Expiration of Sentence on the first working day of each month, no such adjustments are needed in Phase II for the projections after September 30, 1978.

As a final step in the computation of the inmate population forecast, the admissions, population and releases generated by the program are rounded off to whole numbers.

Since this population forecast is based on actual prison admissions (those arriving at the Reception and Medical Center), it does not include contract jail beds or jail backlog. The number of contract jail beds (projected to be constant, based upon the forecast of no dramatic increase in the rate of prison admissions) after December 31, 1978, were added to the population to give the total projections. It has been determined that the official Department projections used for budgetary purposes would include the contract jail beds (since the Department of Corrections is paying for them) but would not include the estimated jail backlog.

In Phase I, it was assumed that one week's admissions would represent the normal jail backlog. The actual jail backlog seems to have stablized during FY 1977-78 when it represented

about 1.8 weeks' admissions. Therefore, this amount was added to the population during the simulation period in order to compare the Phase II projections with those of Phase I. This comparison is presented in the following chapter of this report.

Finally the actual population (with contract jail beds) on June 30, 1978, was used as the "zero base" or starting point for the Phase II projections. The projected admissions and releases were left unchanged and the projected population was adjusted by the amount of the June 30, 1978 error.

The FORTRAN program for this part of the release module is contained in Appendix B.

SLAM-PHASE II METHODOLOGY APPLIED TO THE PROJECTION OF INMATE ADMISSIONS, LOSSES AND POPULATION

As with Phase I, inmate admissions were projected using a multiple regression analysis of the population at risk and the Florida unemployment rate for the years from 1961 to 1977. The population at risk (males in Florida, ages 18-29) were projected by the Bureau of Economic and Business Research at the University of Florida (See Figure 1 on the following page and Table D-1 in Appendix D). The short range projections of the population at risk are down by less than 1% from the projections used in Phase I, while the long term projections are a little higher.

The Economic and Tax Research Unit, Department of Administration, gives three year projections of the unemployment rate. See Figure 2 on page 18, and Table D-2 in Appendix D. The 1977 unemployment rate of 8.2% was 1% higher than projected and the most recent projections for the next two years are slightly higher than the projections used in Phase I. In order to lend continuity to the projected admissions, an estimated unemployment rate of 7% was used for the years after 1980. This represented the average unemployment rate from 1972 to 1977.

The correlation coefficient for admissions with the population at risk was .93 and for admissions with the unemployment rate was .71. The multiple correlation coefficient for admissions with the population at risk and the unemployment rate

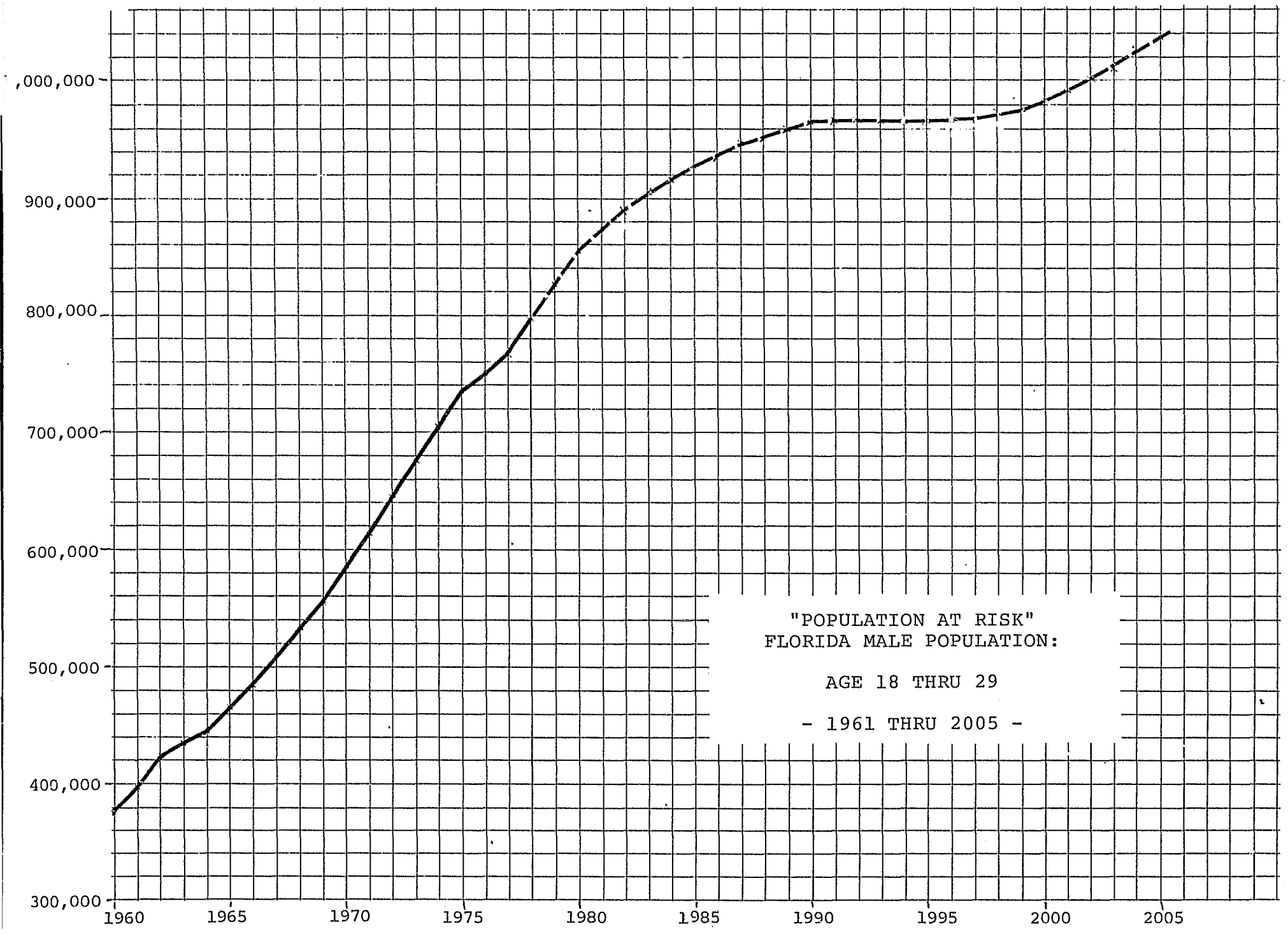

,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
"POPULATION AT RISK"
FLORIDA MALE POPULATION:
AGE 18 THRU 29
- 1961 THRU 2005 -

FIGURE 1

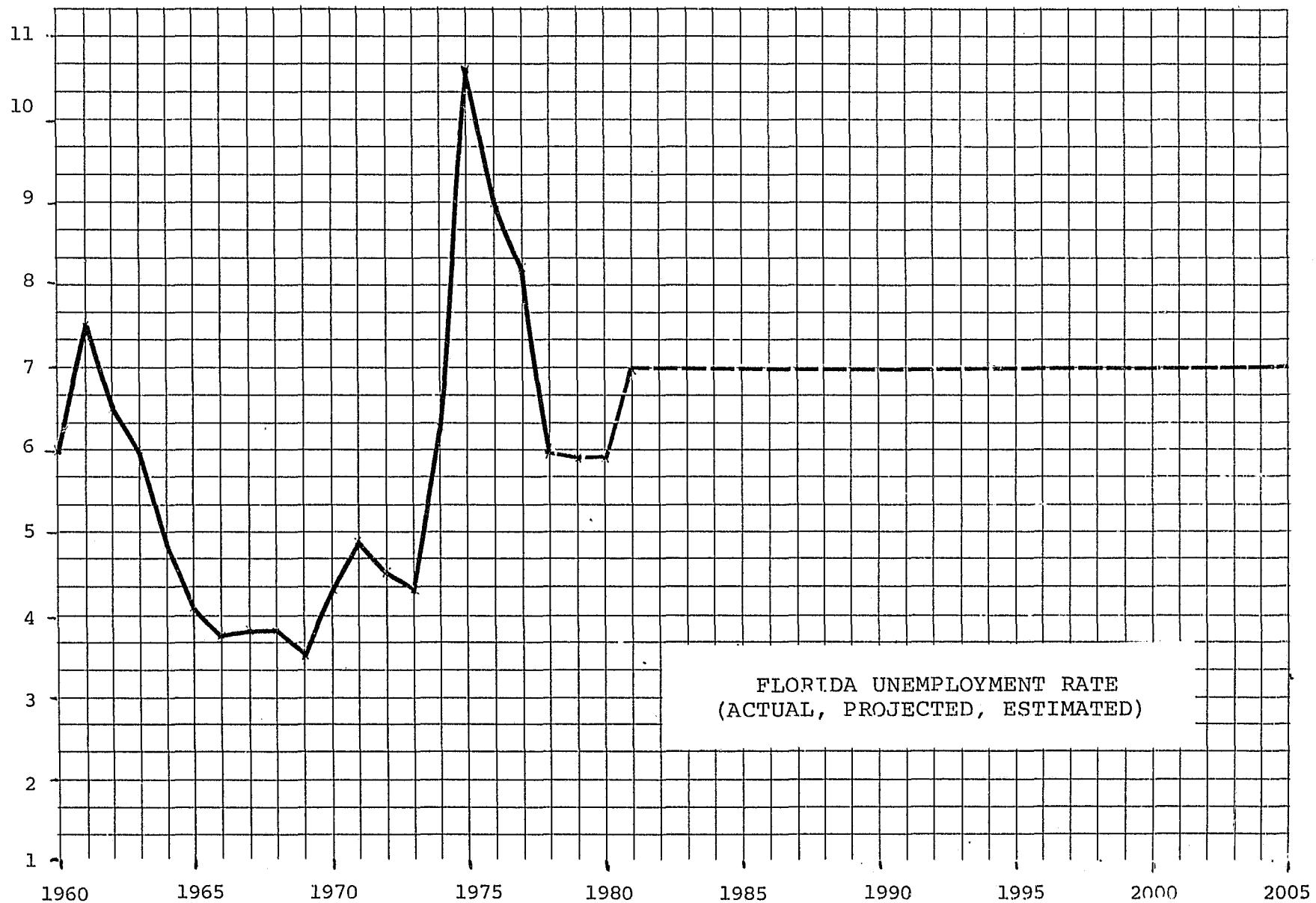

AVERAGE ANNUAL
RATE IN %
11
10
9
8
7
6
5
4
3
2
1
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
FLORIDA UNEMPLOYMENT RATE
(ACTUAL, PROJECTED, ESTIMATED)

FIGURE 2

was .99. The regression equation was:

ADM = 12.0714*POPRISK + 339.3*JNEMP - 3849.2

where POPRISK was counted in Thousands. The decreasing unemployment rate causes the projected admissions to continue to decrease in FY 1978-79, but then the increasing population at risk will cause the admissions to increase in the years that follow. (See Figure 3 on the next page, Table 9 on page 27 and Tables D-3 and D-4 in Appendix D.)

The projected admissions were fed into the release module producing short and long-range projections of the losses and the inmate population. Losses are illustrated in Figure 4 and the population is shown in Figures 5 and 6. (See Table 9 on page 27 and Tables D-3 and D-4 in Appendix D.) Losses include official releases and net lossed due to authorized or unauthorized temporary absences.

A rigorous testing of Phase II of the model has been conducted that included comparison of month-to-month projections (with contract jail beds and the estimated jail backlog) with the actual end-of-month population from June 30, 1973 to June 30, 1978. (See Table 6 on page 23). The results of this testing indicated an average error of overestimation in 50 months of 135 inmates and an average underestimation of 68 in the remaining 10 months. Thus the Phase II simulation was almost twice as good as the Phase I fit.

It is interesting to note, in comparing the projections published in July, 1977, using Phase I with those presented in Table 6, that in spite of the problems identified with the

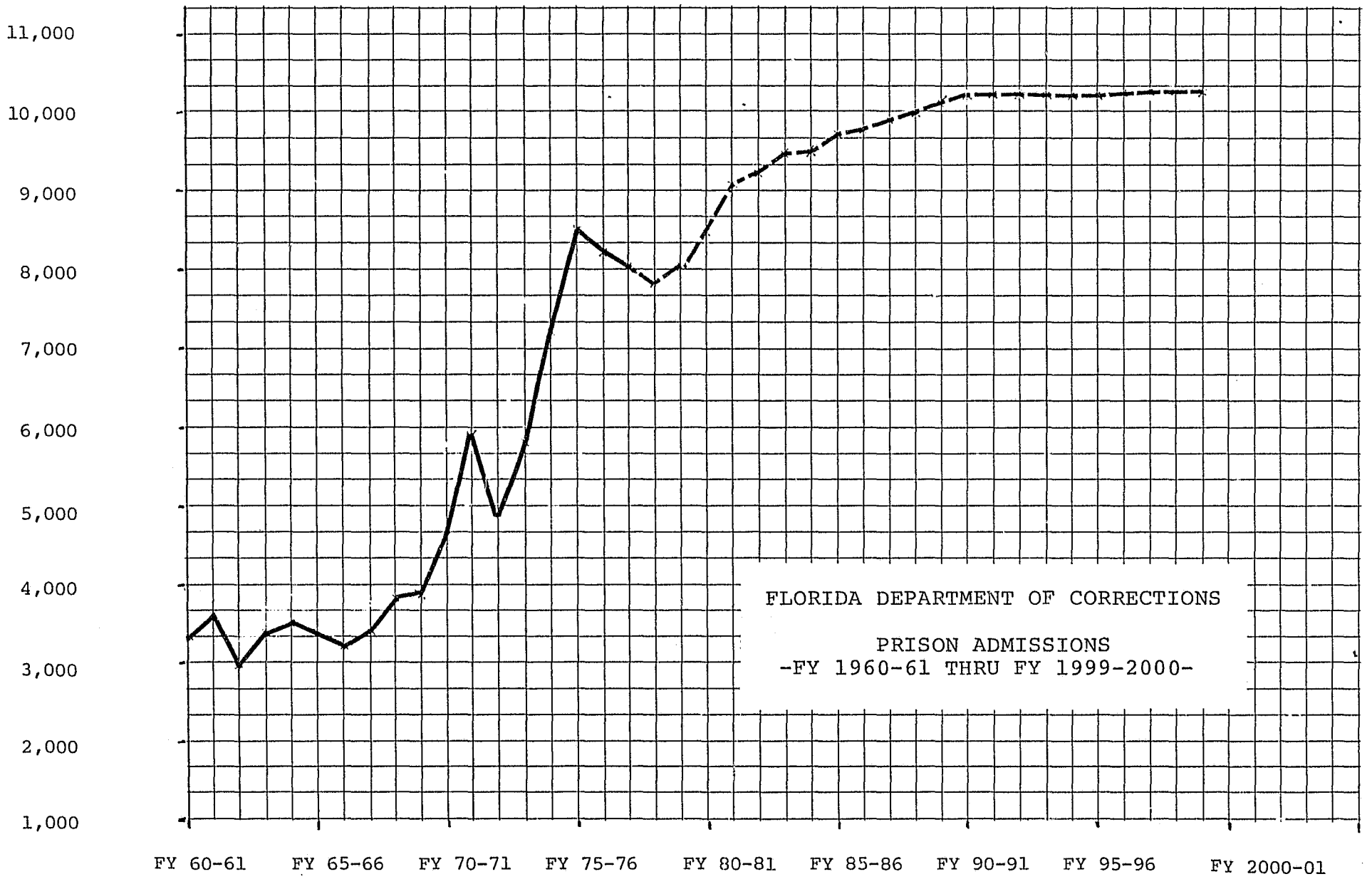

11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
FY 60-61
FY 65-66
FY 70-71
FY 75-76
FY 80-81
FY 85-86
FY 90-91
FY 95-96
FY 2000-01
FLORIDA DEPARTMENT OF CORRECTIONS
PRISON ADMISSIONS
-FY 1960-61 THRU FY 1999-2000-

FIGURE 3

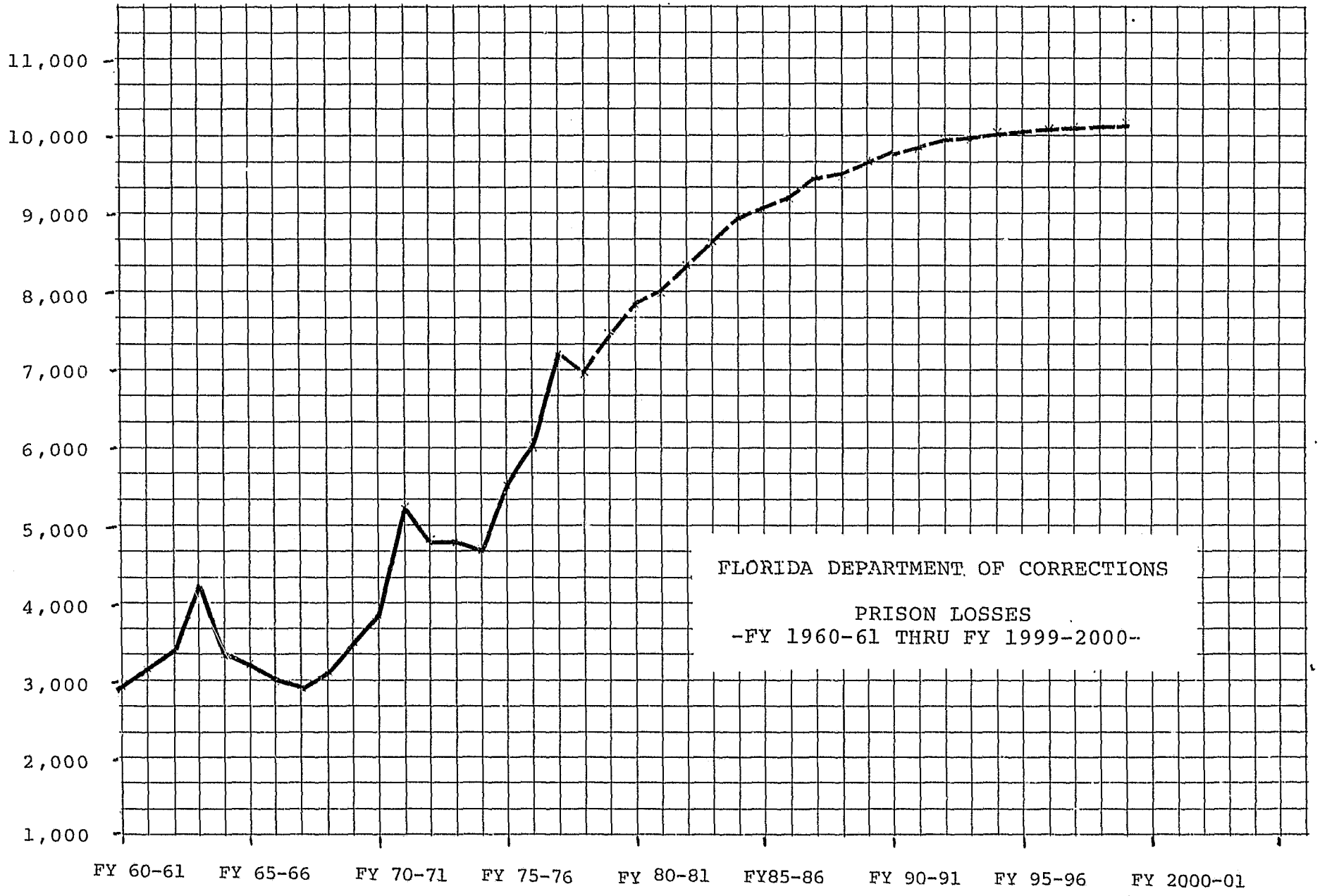
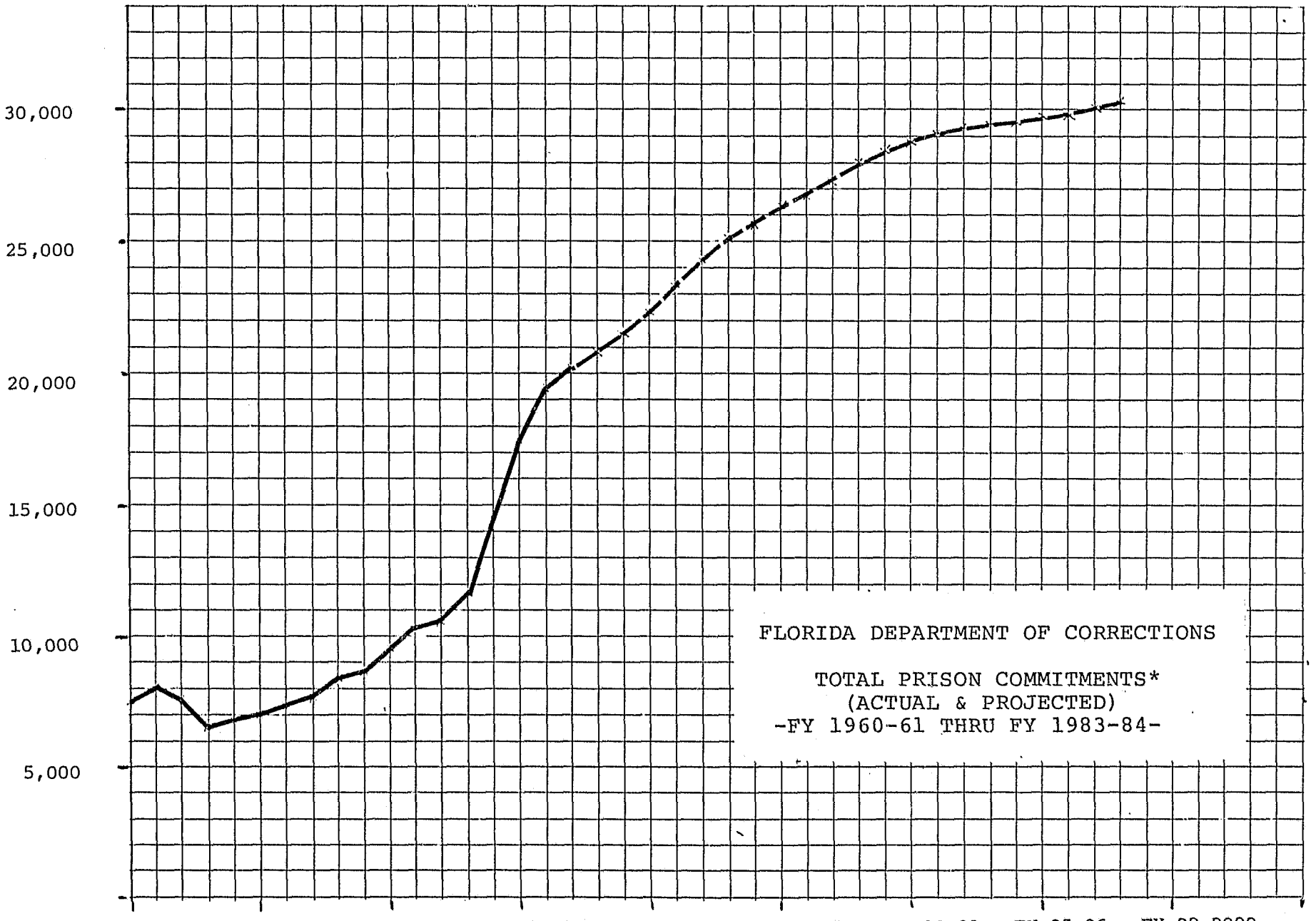
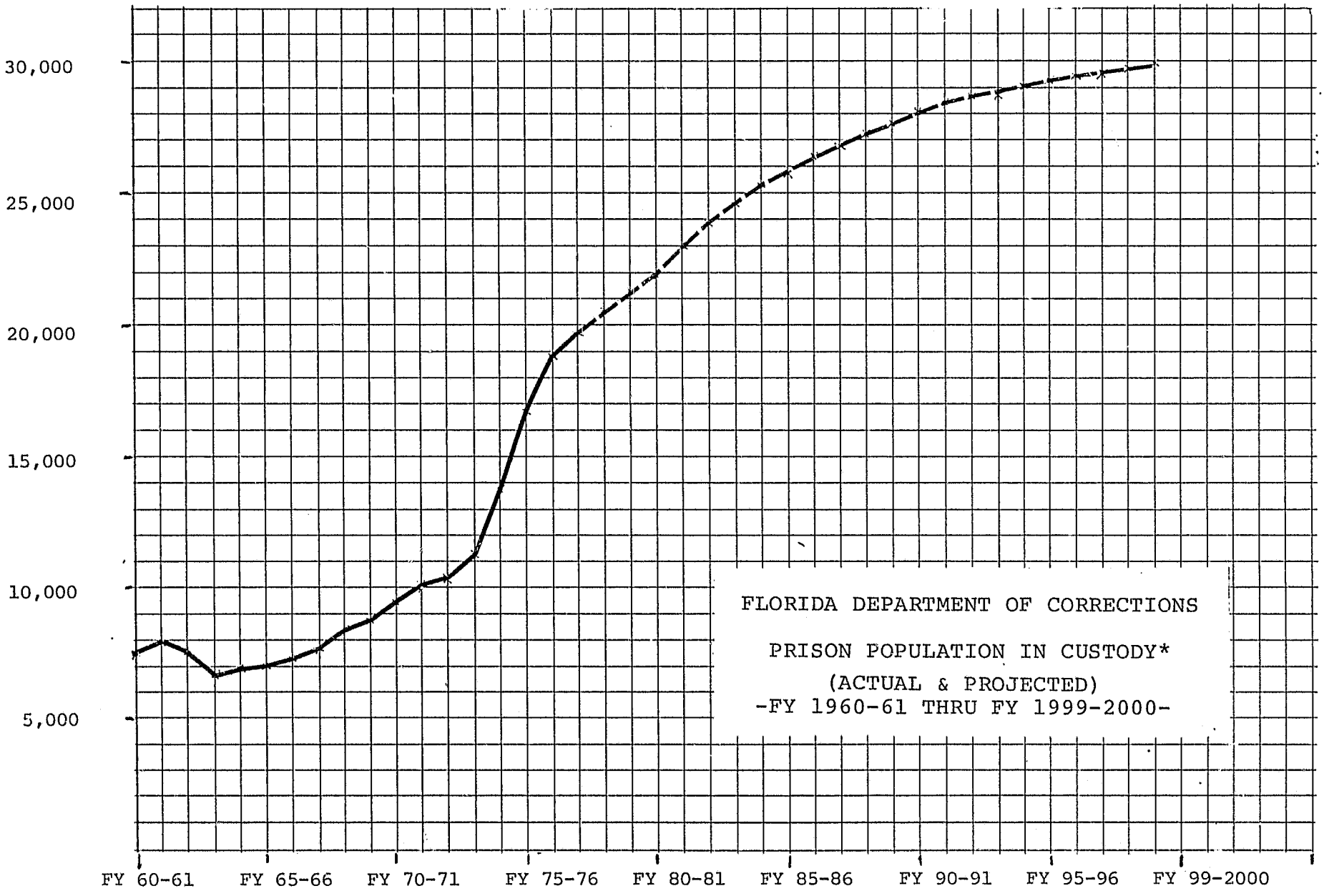

11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
FY 60-61
FY 65-66
FY 70-71
FY 75-76
FY 80-81
FY85-86
FY 90-91
FY 95-96
FY 2000-01
FLORIDA DEPARTMENT OF CORRECTIONS
PRISON LOSSES
-FY 1960-61 THRU FY 1999-2000-

FIGURE 4



*Includes Jail Backlog & Contract Jail Beds

FIGURE 5



*Includes Contract Jail Beds

FIGURE 6

TABLE 6

	POPULATION W CJB			POPULATION W CJB & EJB		
DATE	PROJECTED	ACTUAL	OVER OR (UNDER)	PROJECTED	ACTUAL	OVER OR (UNDER)
7/73	10,273	10,437	(164)	10,470	10,762	(292)
8	10,190	10,103	87	10,387	10,430	(43)
9	10,396	10,219	177	10,593	10,533	60
10	10,518	10,394	125	10,716	10,704	12
11	10,479	10,374	105	10,676	10,690	(14)
12	10,560	10,392	168	10,757	10,687	70
1/74	10,846	10,641	205	11,043	10,943	100
2	11,000	10,811	189	11,197	11,120	77
3	11,066	10,825	241	11,263	11,249	14
4	11,314	11,067	247	11,511	11,406	105
5	11,326	11,141	185	11,523	11,475	48
6	11,587	11,335	252	11,785	11,744	41
7/74	11,768	11,441	327	12,018	11,941	77
8	11,687	11,373	313	11,936	11,873	63
9	11,952	11,599	353	12,202	12,046	156
10	11,984	11,574	410	12,234	12,139	95
11	11,955	11,466	489	12,205	12,026	179
12	12,096	11,420	676	12,346	11,958	388
1/75	12,368	11,713	655	12,618	12,248	370
2	12,771	12,184	587	13,021	12,663	358
3	13,241	12,748	493	13,491	13,258	233
4	13,584	13,165	419	13,834	13,756	78
5	13,897	13,504	393	14,147	14,075	72
6	14,481	14,130	351	14,731	14,637	94
7/75	14,769	14,466	303	15,063	14,986	77
8	14,855	14,688	167	15,149	15,157	(8)
9	15,241	15,004	237	15,535	15,464	71
10	15,429	15,246	183	15,723	15,718	5
11	15,906	15,648	258	16,200	16,062	138
12	15,899	15,714	185	16,193	16,066	127
1/76	16,078	15,890	188	16,372	16,215	157
2	16,477	16,336	141	16,771	16,661	110
3	16,773	16,588	185	17,067	16,913	154
4	16,813	16,519	294	17,107	16,865	242
5	17,263	16,735	528	17,557	17,137	420
6	17,593	17,172	421	17,887	17,531	356
7/76	17,543	17,293	250	17,828	17,632	196
8	17,909	17,639	270	18,194	17,924	270
9	18,125	17,817	308	18,410	18,125	285
10	18,231	17,990	241	18,516	18,295	221
11	18,389	18,085	304	18,674	18,464	210
12	18,231	18,054	177	18,516	18,427	89
1/77	18,602	18,476	126	18,887	18,801	86
2	18,716	18,637	79	19,001	18,939	62
3	18,886	18,827	59	19,171	19,112	59
4	18,721	18,674	47	19,006	18,957	49
5	19,083	19,028	55	19,368	19,284	84
6	19,181	19,269	(88)	19,466	19,534	(68)
7/77	19,288	19,317	(29)	19,565	19,612	(47)
8	19,361	19,287	74	19,638	19,558	80
9	19,217	19,072	145	19,494	19,315	179
10	19,507	19,282	225	19,784	19,573	211
11	19,506	19,473	33	19,783	19,748	35
12	19,334	19,347	(13)	19,611	19,643	(32)
1/78	19,549	19,479	70	19,826	19,751	75
2	19,640	19,638	2	19,917	19,897	20
3	19,412	19,402	10	19,689	19,676	13
4	19,670	19,717	(47)	19,947	19,990	(43)
5	19,733	19,785	(52)	20,028	20,087	(59)
6	19,796	19,881	(85)	20,073	20,142	(69)

Phase I program and the adjustment made with Phase II, the projected population levels after January, 1977, are remarkably similar. This, of course, would not have been the case if the Legislature had not passed the new gain-time law which prohibits the award of discretionary extra gain time that the Department had been giving under the old statute.

Phase II methodology has several important advantages over that used in Phase I. Incarceration probability functions were used instead of release distributions in order to eliminate the need for random numbers and thereby eliminating the source of random error. The incarceration probability functions were based on all inmates in the system from June 30, 1974 to June 30, 1977, rather than just on those released. This more accurately reflects the current pattern of incarceration and release and therefore no adjustments were necessary. Technical adjustments were made to the FORTRAN computer program that eliminated a rounding error and accurately simulated five years of historical data.

From looking at Table 6, it is evident that the projections including the estimated jail backlog give a better curve fit than that for the population without the backlog. Historically, as the jail backlog began to grow, the Florida Parole and Probation Commission apparently began to parole more inmates. During this period the model overestimated the population. However, when the large estimated jail backlog was added to the actual population, it tended to close the gap between the actual and

projected populations. The largest error occurred in December, 1974, when paroles were abnormally high. Another large error occurred in May, 1976, during a period when paroles were higher than usual. However, part of this error is attributed to the fact that the major release at the first of June was shifted to May since the last day of May was a holiday.

During FY 1977-78, the jail backlog seems to have stabilized. The parole rate has also returned to normal and both projections seem to be giving about the same fit with respect to the actual end-of-month population. In fact, the projections (without jail backlog) for FY 1977-78 gave the best fit for any of the five fiscal years shown.

The projection for June 30, 1978, underestimated the actual population by 85. Since the actual population is the starting point for making the projections, the projected admissions and losses were not changed but the projected population was increased by 85.

The population is expected to increase by about 400 inmates during October and November, 1978, due to the phase out of end-of-sentence lump-sum gain time caused by statutory changes made in the 1978 legislative session. Also with the major releases occurring on the first working day of each month, the population curve should be much smoother than it has been in the past.

The projected population based upon Phase II, including contract jail beds for June 30, 1979, is 20,685. The long range projections indicate that the inmate population will be about 30,000 by the year 2000.

TABLE 7

SLAM-II SHORT-RANGE
INMATE POPULATION PROJECTIONS
(INCLUDES CONTRACT JAIL BEDS, EXCLUDES ESTIMATED JAIL BACKLOG)
1978 TO 1983

FISCAL YEAR	ANNUAL ADMISSIONS	ANNUAL LOSSES	JUNE 30 POPULATION	ANNUAL NET GAIN
1977-78	8001	7389	19,881	612
1978-79	7799	6995	20,685	804
1979-80	8092	7541	21,236	551
1980-81	8430	7723	21,943	707
1981-82	9039	7975	23,007	1064
1982-83	9244	8331	23,920	913

ASSUMPTIONS

* The major releases will occur on the first working day of the month.
* End of Sentence lump sum gain time will be phased out by December accounting for an increase of about 400 inmates.
* Contract jail beds will be reduced to about 45 by December.
* The gain time law passed by the last legislature will effect no significant change in current release rates.
* The unemployment rate will be about 6.0% in 1978, 5.9% in 1979 and 1980 as projected by DOA. After 1980, it is estimated that the average unemployment rate will be 7% based upon average unemployment rate from 1972-1977.
* The criminal code currently on the books will not change significantly.
* The general public, prosecutors and judges will react to crime and criminals as they have in the past.
* The parole rate will not change significantly.
* Population-at-risk estimates published by DOA were revised from 804,000 to 799,000 for 1978, from 830,000 to 826,000 for 1979, from 857,000 to 854,000 for 1980, from 877,000 to 874,000 for 1981, from 893,000 to 891,000 for 1982, and from 906,000 to 905,000 for 1983.

TABLE 8

MONTHLY INMATE POPULATION PROJECTIONS
(INCLUDES CONTRACT JAIL BEDS, EXCLUDES ESTIMATED JAIL BACKLOG)
FY 1977-79 TO FY 1982-83

MONTH	1978-79	1979-80	1980-81	1981-82	1982-83
July	19,934	20,756	21,322	22,064	23,120
August	20,000	20,842	21,423	22,201	23,248
September	20,072	20,933	21,530	22,344	23,380
October	20,237	20,951	21,559	22,404	23,426
November	20,490	20,982	21,604	22,479	23,486
December	20,483	20,991	21,623	22,526	23,518
January	20,489	21,001	21,645	22,575	23,553
February	20,509	21,029	21,686	22,643	23,606
March	20,612	21,141	21,813	22,802	23,755
April	20,599	21,132	21,816	22,827	23,766
May	20,619	21,161	21,855	22,891	23,817
June	20,685	21,236	21,943	23,007	23,920

TABLE 9

SLAM II LONG-RANGE INMATE POPULATION PROJECTIONS
(INCLUDES CONTRACT JAIL BEDS, EXCLUDES ESTIMATED JAIL BACKLOG)
6/30/1979 TO 6/30/2000

DATE	ADMISSIONS	LOSSES	POPULATION
6/79	7,799	6,995	20,685
6/80	8,092	7,541	21,236
6/81	8,430	7,723	21,943
6/82	9,039	7,975	23,007
6/83	9,244	8,331	23,920
6/84	9,431	8,658	24,675
6/85	9,558	8,915	25,318
6/86	9,679	9,111	25,886
6/87	9,787	9,279	26,394
6/88	9,884	9,415	26,863
6/89	9,992	9,543	27,312
6/90	10,077	9,667	27,722
6/91	10,149	9,783	28,088
6/92	10,184	9,872	23,400
6/93	10,198	9,933	28,665
6/94	10,184	9,978	28,871
6/95	10,174	10,003	29,042
6/96	10,174	10,016	29,200
6/97	10,184	10,023	29,361
6/98	10,209	10,038	29,532
6/99	10,247	10,057	29,722
6/2000	10,282	10,082	29,922

APPENDIX A

This Appendix contains a technical description of the first part of the release module and a copy of the FORTRAN program used to generate the incarceration probability functions.

THE PROBABILITY OF REMAINING INCARCERATED AND AVERAGE TIME SERVED IN PRISON

For inmate population projection, it has been found useful to compute an incarceration probability function that gives the probability that an offender will still be in prison at the end of each month. Actually, the inmates were divided into a number of classes depending on the length of their sentence and an incarceration probability function was computed for each class. (Technically these are not normally called probability functions, but they are related to the associated distribution functions of probability functions for the length of time served, since these functions start at one and decrease to zero.) Another useful statistic is the average time served in prison for all inmates as well as for the inmates in each length-of-sentence class.

These statistics are generally desired for inmates currently incarcerated or being admitted. The usual method is to compute probability functions and the average time served for inmates released during the last fiscal year. There are two problems with this method. The first is that the number of admissions has generally been increasing each year so that the number of inmates who have served a long time is smaller than the number of inmates currently being

admitted who will be serving relatively long terms in the future. Therefore, the probabilities and the average time served by inmates released will be smaller than for those now in prison and those being admitted today. However, this problem can be eliminated by weighting the inmate records inversely with respect to the number of admissions during the inmate's admission year.

The second problem is that the rate of release actually changes from year to year. This is especially true in the case of longer sentences where the number of inmates being released is a very small percentage of the total number incarcerated, so that those who were released may not be at all typical of those who will be released in the future.

One method for overcoming these problems would involve computation of functions and the average time served for the inmates admitted during a given fiscal year after they had all been released. This would eliminate the need for weighting records but would be limited by the availability of computerized data for inmates with long sentences. The second problem would be accentuated since the release patterns could have changed considerably for the longer sentences.

An alternate method will be developed here for computing the incarceration probability functions and the average time served based on the records of all of the inmates in prison during one or more fiscal years. First, it will be shown that the average time served statistic is the sum of the monthly incarceration probabilities for each length-of-sentence class.

In order to illustrate the method, attention will be restricted to the class of offenders with five year sentences. Considering only those offenders admitted during FY 1972-73, all would have been released by June 30, 1978. The incarcertation probability functions for those inmates could be computed directly. Let N represent the number admitted during that year, let Q(t) be equal to the number of those inmates who had served at least t months and let $P(t) = Q(t)/N$. Then P(t) represents the probability that an inmate would still be incarcerated at the end of t months.

It will be shown that the average time served by those inmates with five year sentences is:

$$P(1) + P(2) + P(3) + \ldots + P(60).$$

The number of inmates serving at least two months, Q(2), subtracted from the number serving at least one month, Q(1), gives the number serving exactly one month, Q(1)-Q(2). Similarly, Q(2)-Q(3) gives the number serving exactly two months, Q(3)-Q(4) gives the number serving exactly three months, etc. Since nobody can serve longer than 60 months on a five year sentence, the number serving exactly 60 months is simply Q(60). The average time served is equal to the number serving one month times one plus the number serving two months times two and so on through the number serving sixty months times sixty divided by the total number admitted. Therefore,

the average time served is equal to:

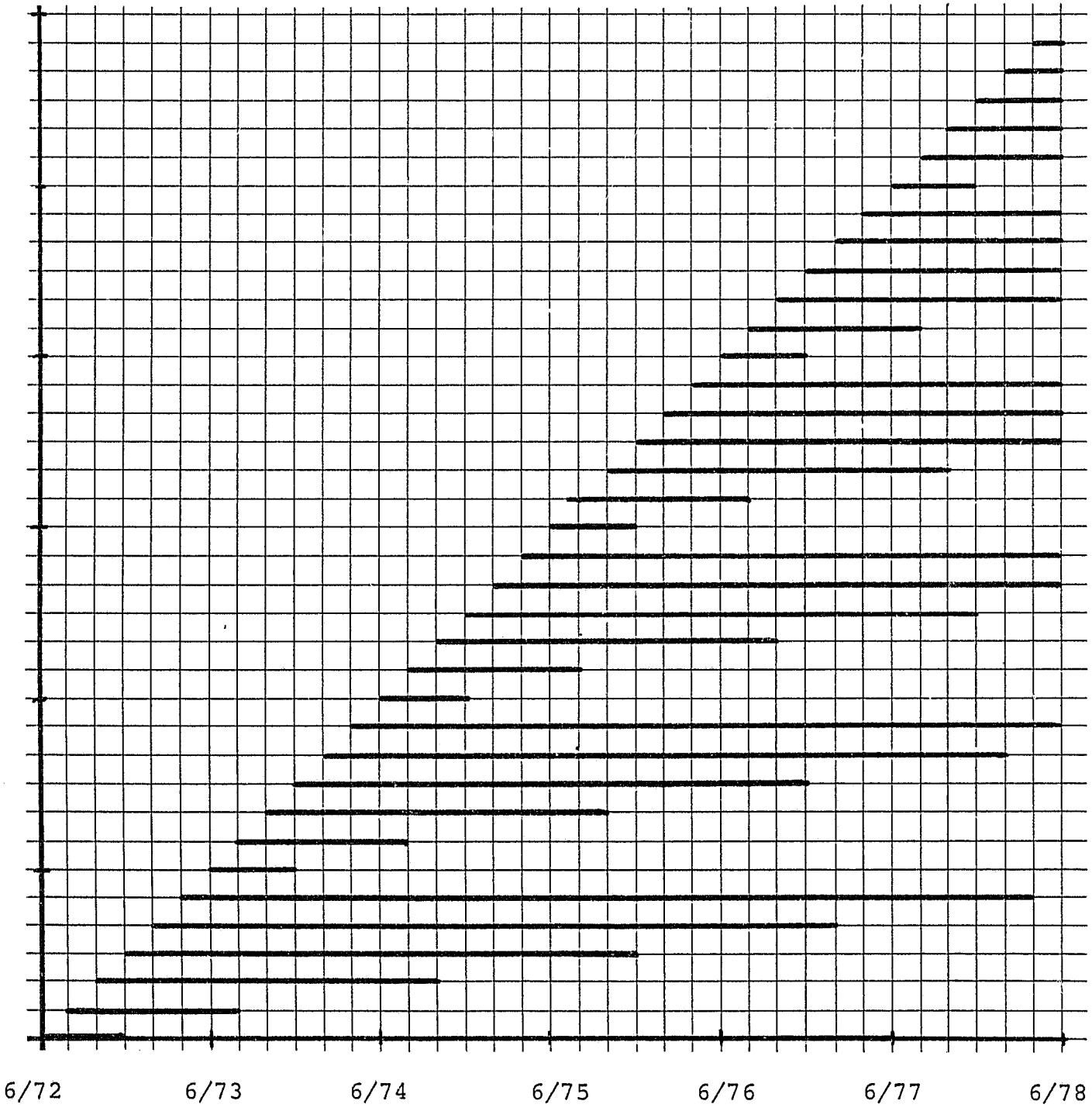
$$((Q(1)-Q(2))*1-(Q(2)-Q(3))*2+Q(3)-Q(4))*3+\ldots+(Q(59)-Q(60))*59+(Q(60))*60)/N$$
$$=(Q(1)-Q(2)+2*Q(2)-2*Q(3)+3*Q(3)-3*Q(4)+\ldots+59*Q(59)=59Q(60)+60*Q(60))/N$$
$$=(Q(1)+Q(2)+Q(3)+\ldots+Q(60))/N$$
$$=Q(1)/N+Q(2)/N+Q(3)/N+\ldots+Q(60)/N$$
$$=P(1)+P(2)+P(3)+\ldots+P(60).$$

The method for computing the incarceration probability functions, based on the records from one fiscal year, will now be illustrated for inmates with five year sentences. The data base required to support this method must include the admission date and the number of months served for every inmate in the prison system at the end of the most recent fiscal year and for every inmate released during that fiscal year. Since the most recent fiscal year is FY 1977-78, then the data base available to the Department will contain information on inmates admitted during the six fiscal years beginning with FY 1972-73.

Figure A-1 on the next page represents a sample data base with six admissions per year for the last six years and identical patterns of admission and release for each years admissions as far as data is available. Figure A-2 represents the automated data base for this sample consisting of those inmates who were released during FY 1977-78 or who are still in prison. Notice that the portions of the lines in Figure A-2, between 6/77 and 6/78, can be pieced together to give a complete pattern of those admitted during FY 1972-73 and

FIGURE A-1

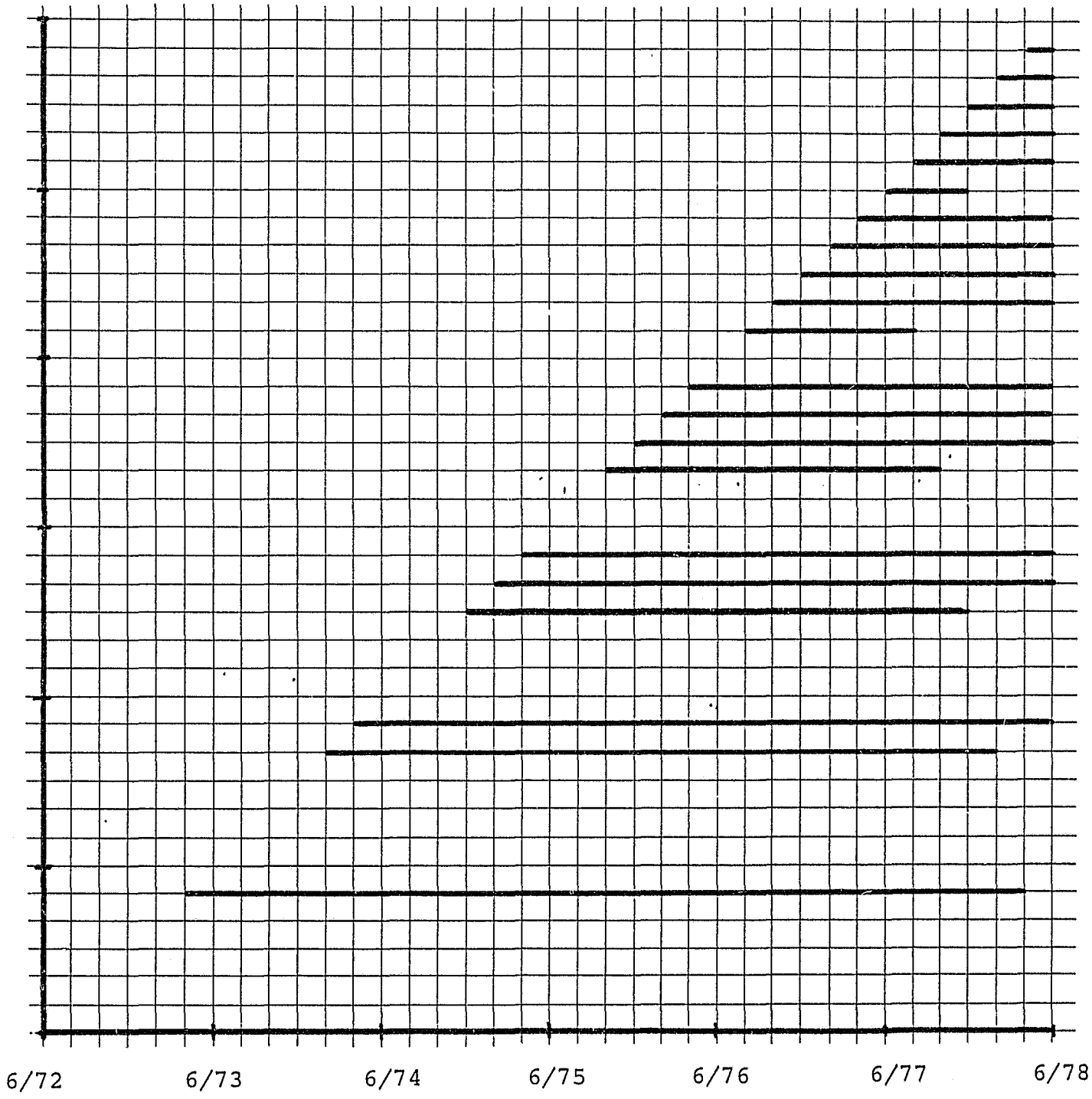
SAMPLE DATA BASE



Each line represents an inmate with a five year sentence starting at his admission date and ending at his release date or the status date.

FIGURE A-2

SUB-SAMPLE AUTOMATED DATA BASE



These lines represent the inmates in the sample who were released during FY 1977-78 or have not yet been released.

therefore can be used to calculate the incarceration probability function.

The example above illustrates the procedures to be followed. Each offender included in the automated data base is counted in Q(1) as having served at least one month, if he had served one month in prison during FY 1977-78. Similarly, he is counted in Q(2) as having served at least two months, if the time he had served two months in prison was during FY 1977-78, and so on for each succeeding month.

It is generally true that the year-to-year patterns of admissions and releases are not identical. The total number of inmates under consideration may vary from month to month. Therefore, a total number R(t) is computed for each month and is used in place of N in the calculation of the probability of remaining incarcerated after t months:

$$P(t) = Q(t)/R(t).$$

R(t) counts both offenders in prison and those released. An offender included in the automated data base is counted in the total R(t) if the time at which he had served at least t months occurred during FY 1977-78, or if he had served fewer than t months and had been released during FY 1977-78.

Since the number of admissions per year generally increases over the years, it is necessary to weight those past years with smaller admissions so when the data from FY 1977-78

is pieced together, it will approximate the pattern for one years admissions. That is, R(t) will be approximately the same number for all t. It may happen that an incarceration probability function increases for a brief period of time. This does not make sense as a probability, but it accurately reflects the changing release patterns; namely, inmates recently admitted are being released faster than inmates who were admitted some time ago.

The benefit of this procedure is that it uses the most recent data available to calculate the incarceration probability functions that are best suited for projecting the inmate population and for calculating the best estimate of the current average time served. If release data were available for more than one fiscal year, then this procedure could be modified to include several fiscal years. In Florida, release data was used for the last three available fiscal years: FY 1974-75 through FY 1976-77.

The model presented here assumes that each inmate remains in prison continuously from admission to release. If additional data were available, one could also compute the probability of being out to court, being out on parole, having parole revoked, serving additional time in prison and even jail time served prior to admission to prison. In fact, probabilities for every possible status within the criminal justice system could be computed in order to simulate the total system.

The FORTRAN program used to generate the incarceration probability functions is listed on the next few pages. Actually the program is a little more general than described here. If the data base contains data for inmates released during a period of more than one fiscal year, then the program can be used to compute the probability functions and average time served for any span of fiscal years within this period.

```
      PROGRAM PRBFCT(TAPE1,TAPE2,TAPE3,OUTPUT,TAPE4=OUTPUT)
C          THE PURPOSE OF THIS PROGRAM IS TO COMPUTE THE
C          INCARCERATION PROBABILITY FUNCTIONS AND THE AVERAGE
C          LENGTH OF TIME SERVED RELATIVE TO A GIVEN TIME PERIOD.
      INTEGER SENT,MOIN,ADMMO,ADMYR,REL,RELTYPE,M(15),S(15)
      REAL P(625),Q(625),R(625),T(15)
      DATA M/2*12,2*24,2*36,2*60,2*120,180,240,2*624/
C          IYEAR - THE INITIAL YEAR OF RELEASES.
C          JYEAR - THE FINAL YEAR OF RELEASES AND THE
C               YEAR OF THE STATUS TAPE.
C          INDEX - THE NUMBER OF LENGTH-OF-SENTENCE CLASSES.
C          RELTYPE - THE TYPE OF RELEASE FOR WHICH THE PROBABILITY
C               FUNCTIONS ARE BEING COMPUTED.
C          IMONTH - THE INITIAL MONTH OF THE FISCAL YEARS UNDER
C               CONSIDERATION.
C          JMONTH - THE FINAL MONTH OF THE FISCAL YEARS UNDER
C               CONSIDERATION.
      READ(2,200)IYEAR,JYEAR,INDEX,RELTYPE
      IMONTH=(IYEAR-1900)*12+7
      JMONTH=(JYEAR-1900)*12+6
      I=1
C          N - THE MAXIMUM NUMBER OF MONTHS (M(I)) THAT COULD BE
C               SERVED IN THE CLASS  I  (A MULTIPLE OF 12).
C          SENT - LENGTH-OF-SENTENCE CLASS.
C          MOIN - MONTHS IN PRISON.
C          ADMMO - MONTH OF ADMISSION (COUNTING FROM 1900).
C          REL - THE TYPE OF RELEASE.
    8 N=M(I)
    4 READ(1,100)SENT,MOIN,ADMMO,REL
      IF(EOF(1))1,2
C          THE DATA HAD TO BE PRESORTED ACCORDING TO THE
C          LENGTH-OF-SENTENCE CLASS (SENT).  WHEN THE PROGRAM
C          READS A RECORD THAT IS IN THE NEXT CLASS, THE PROGRAM
C          BRANCHES TO COMPUTE THE PROBABILITY FUNCTION.
    2 IF(SENT.NE.I)GO TO 1
C          THE PROGRAM SELECTS ONLY THOSE INMATES WHO SERVED SOME
C          TIME DURING THE FISCAL YEARS UNDER CONSIDERATION
C          AND WHO ARE OF THE RELEASE TYPE  RELTYPE.
      IF(ADMMO+MOIN.LT.IMONTH.OR.ADMMO.GT.JMONTH
     +.OR.REL.NE.RELTYPE)GO TO 4
C          EACH RECORD IS WEIGHTED ACCORDING TO THE YEAR OF
C          ADMISSION (ADMYR).
      ADMYR=(ADMMO-1)/12
      IF(ADMYR.LE.25)WT=18.0
      IF(ADMYR.GE.26.AND.ADMYR.LE.54)WT=6.8
      IF(ADMYR.GE.55.AND.ADMYR.LE.70)WT=2.7
      IF(ADMYR.GE.71.AND.ADMYR.LE.74)WT=1.6
      IF(ADMYR.GE.75)WT=1.0
C          THE MONTHS SERVED (MOIN) WIL BE REDUCED IF IT IS
C          GREATER THAN THE MAXIMUM (N) SET FOR THAT CLASS
```

```
C          OR IF THE INMATE WAS RELEASED AFTER THE TIME PERIOD
C          UNDER CONSIDERATION.
      IF(MOIN.GT.N)MOIN=N
      IF(ADMMO+MOIN.GT.JMONTH)MOIN=JMONTH-ADMMO+1
C          INITIAL - THE NUMBER OF THE MONTH BEING SERVED THAT
C               IS THE FIRST ONE IN THE TIME PERIOD UNDER
C               CONSIDERATION.
      INITIAL=IMONTH-ADMMO+1
      IF(INITIAL.LE.0)INITIAL=1
C          Q(J) - THE WEIGHTED NUMBER OF INMATES WHO HAVE REMAINED
C               INCARCERATED AFTER SERVING AT LEAST  J  MONTHS.
C          R(J) - INCLUDES THESE INMATES AND THOSE RELEASED DURING
C               THE TIME PERIOD UNDER CONSIDERATION.
      DO 3 J=INITIAL,MOIN
      Q(J)=Q(J)+WT
    3 R(J)=R(J)+WT
      IF(ADMMO+MOIN.GT.JMONTH.OR.MOIN.EQ.N)GO TO 4
      K=MOIN+1
      DO 5 J=K,N
    5 R(J)=R(J)+WT
      GO TO 4
C          P(J) - THE INCARCERATION PROBABILITY FUNCTION.
C          T(I) - AVERAGE TIME SERVED IN MONTHS.
C          U - AVERAGE TIME SERVED IN YEARS.
C          S(I) - APPROXIMATE NUMBER OF INMATES IN THIS CLASS.
    1 DO 6 J=1,N
      P(J)=Q(J)/R(J)
    6 T(I)=T(I)+P(J)
      U=T(I)/12
      S(I)=R(1)
C          WRITE THE AVERAGE TIME SERVED AND THE INCARCERATION
C          PROBABILITY FUNCTION.  WHEN ALL THE CLASSES ARE
C          COMPLETED, BRANCH TO COMPUTE THE OVERALL AVERAGE.
      WRITE(3,301)N,T(I),U,S(I),(P(J),J=1,N)
      IF(I.EQ.INDEX)GO TO 7
C          INITIALIZE  Q(J)  AND  R(J)  AND INCREMENT  I  FOR
C          THE NEXT CLASS.  BACKSPACE IN ORDER TO REREAD THE
C          FIRST RECORD OF THIS CLASS.
      DO 9 J=1,N
      Q(J)=0
    9 R(J)=0
      I=I+1
      BACKSPACE 1
      GO TO 8
C          COMPUTE AND WRITE THE OVERALL AVERAGE TIME SERVED.
    7 T(1)=T(1)*S(1)
      DO 10 I=2,INDEX
      T(1)=T(1)+T(I)*S(I)
   10 S(1)=S(1)+S(I)
      T(1)=T(1)/S(1)
      U=T(1)/12
```

```
    WRITE(3,302)T(1),U,S(1)
100 FORMAT(I2,2I3,4X,I1)
200 FORMAT(I4,I5,I3,I2)
301 FORMAT(I3,3X,*MEAN IS*,F7.2,* MONTHS OR*,F6.2,* YEARS FOR*,
   +I6,* INMATES*/(12F7.5))
302 FORMAT(6X,*MEAN IS*,F7.2,* MONTHS OR*,F6.2,* YEARS FOR*,
   +I6,* INMATES*)
    STOP$END
```

APPENDIX B

This Appendix contains a copy of the FORTRAN program used to generate the projected releases and population.

```
      PROGRAM SLAM2(TAPE1,TAPE2,TAPE3,TAPE4,
     +OUTPUT,TAPE5=OUTPUT)
C           THE PURPOSE OF THIS PROGRAM IS TO PROJECT THE INMATE
C           POPULATION OF THE FLORIDA PRISON SYSTEM, GIVING MONTHLY
C           SHORT TERM PROJECTIONS AND ANNUAL LONG TERM PROJECTIONS.
      INTEGER ADMMO,SENT,CUT,BEGMO,NADM(324),NREL(324),ACTCJB(72),
     +NPOP(324),NPOPCJB(324),MO(324),YR(324),ACTUAL(72),CJB(324),
     +ERRCJB(72),NRELCJB(324),NPOPEJB(72),ACTEJB(72),ERREJB(72),EJB(72)
      REAL P(625),Q(324),POP(6,324),ADMFACT(27),ADM(324),REL(324)
C           IYR - THE YEAR OF THE STATUS TAPE.
C           I1 - THE NUMBER OF YEARS OF ADMISSION DATA.
C           I2 - THE NUMBER OF YEARS OF THE SIMULATION PERIOD PLUS
C                THE SHORT TERM PROJECTIONS.
C           I3 - THE NUMBER OF YEARS OF THE SIMULATION PERIOD PLUS
C                THE LONG TERM PROJECTIONS.
C           RESTRICTIONS:  I2 LE I3 AND I3 LE 27.
C           STFACT - A FACTOR THAT IS MULTIPLIED BY THE INITIAL POPULATION
C                GIVEN BY THE COMPUTERIZED DATA BASE IN ORDER TO EQUAL THE
C                OFFICIAL STATUS POPULATION IN THE ANNUAL REPORT.
C           ADMFACT - A FACTOR THAT IS MULTIPLIED BY THE NUMBER OF ADMISSIONS
C                GIVEN BY THE COMPUTERIZED DATA BASE IN ORDER TO EQUAL THE
C                OFFICIAL NUMBER OF ADMISSIONS OR THE PROJECTED NUMBER OF
C                ADMISSIONS (USING THE LAST YEAR OF ADMISSION DATA AS THE
C                BASE FOR THE PROJECTED ADMISSIONS).
      READ(3,301)IYR,I1,I2,I3,STFACT,(ADMFACT(I),I=1,I3)
C           CUT - JULIAN MONTH OF THE STATUS DATA.
C           I4 - THE NUMBER OF YEARS OF ADMISSION DATA PLUS ONE.
C           I5 - THE NUMBER OF MONTHS OF THE SIMULATION PERIOD PLUS
C                THE SHORT TERM PROJECTIONS.
C           I6 - THE NUMBER OF MONTHS OF THE SIMULATION PERIOD PLUS
C                THE LONG TERM PROJECTIONS
      CUT=(IYR-1900)*12+6
      I4=I1+1
      I5=12*I2
      I6=12*I3
C           THERE ARE 15 LENGTH-OF-SENTENCE CLASSES.  THERE IS A PROBABILITY
```

```
C           FUNCTION FOR THE FIRST 14 CLASSES.  THE LAST CLASS REPRESENTS
C           DEATH SENTENCES; SINCE NONE HAVE BEEN RELEASED IN THE LAST 5
C           YEARS, THEY ARE PROGRAMMED TO REMAIN IN PRISON DURING THE ENTIRE
C           PROJECTION PERIOD.
C           I  IS INITIALIZED AND THE FIRST PROBABILITY FUNCTION,  P(J),
C           IS READ.
      I=1
   62 READ(1,101) N,(P(J),J=1,N)
C           SENT - LENGTH-OF-SENTENCE CLASS.
C           ADMMO - JULIAN MONTH OF ADMISSION.
C           MAND - 1  REPRESENTS A MANDATORY MINIMUM TIME TO BE SERVED
C                REQUIREMENT.
C           MIN - THE MANDATORY MINIMUM TIME TO BE SERVED IF APPLICABLE.
    4 READ(2,201)SENT,ADMMO,MAND,MIN
      IF(EOF(2))1,3
C           THE DATA MUST BE PRE-SORTED ACCORDING TO LENGTH-OF-SENTENCE
C           CLASS (SENT).  WHEN THE PROGRAM READS A RECORD THAT IS IN
C           THE NEXT CLASS, THE PROGRAM BRANCHES IN ORDER TO READ THE
C           NEXT PROBABILITY FUNCTION.
    3 IF(SENT.NE.I) GO TO 61
C           L - 1 = STATUS DATA, 2 = FIRST YEAR OF ADMISSION DATA, ETC.
      L=1
      DO 11 J=1,I1
      JCUT=CUT+(J-1)*12
      IF(ADMMO.GT.JCUT)L=J+1
   11 CONTINUE
C           THE STATUS MONTH (CUT) IS NOW CONSIDERED AS THE ZERO ON THE
C           SCALE OF MONTHS FOR  ADMMO, BEGMO, MINMO, MAXMO, ETC.
C           BEGMO - THE BEGINNING MONTH IS THE MONTH THAT THE INMATE
C                ENTERED THE SYSTEM AFTER THE  CUT.
      ADMMO=ADMMO-CUT
      BEGMO=ADMMO
      IF(BEGMO.LE.0)BEGMO=1
C           IF A DEATH SENTENCE, INMATE REMAINS IN PRISON.
      IF(SENT.EQ.15)GO TO 30
C           MINMO - THE FIRST MONTH AFTER ANY MANDATORY MINIMUM TIME TO
C                BE SERVED REQUIREMENT AND AFTER THE  CUT.
      MINMO=ADMMO
```

```
      IF(MAND.EQ.1)MINMO=MINMO+MIN*12
      IF(MINMO.LE.0)MINMO=1
C          MAXMO - THE MAXIMUM MONTH NEEDED FOR THE PROBABILITY FUNCTION,
C               BUT NO GREATER THAN THAT REQUIRED FOR THE LONG TERM PROJECTIONS
      MAXMO=ADMMO+N-1
      IF(MAXMO.GT.I6)MAXMO=I6
C          THIS SECTION SETS THE LIMITS (K1, K2) FOR THE MANDATORY
C          PORTION OF A SENTENCE.
      IF(MAND.NE.1.OR.MINMO.LE.BEGMO)GO TO 31
      K1=BEGMO
      K2=MINMO-1
      IF(MAXMO.LT.MINMO)K2=MAXMO
      GO TO 32
C          THIS SECTION SETS THE LIMITS (K1, K2) FOR DEATH SENTENCES.
   30 K1=BEGMO
      K2=I6
C          POP(L,J) - THE PORTION OF THE POPULATION IN MONTH  J  WITH
C               RESPECT TO THOSE ADMITTED IN THE YEAR(S) RELATED TO  L.
C          THIS SECTION INCREMENTS  POP  BY  1  SINCE THESE INMATES CANNOT
C          BE RELEASED DURING THIS PERIOD.
   32 DO 33 J=K1,K2
   33 POP(L,J)=POP(L,J)+1
      IF(MAXMO.LT.MINMO.OR.SENT.EQ.15)GO TO 37
C          THIS SECTION SETS THE NEXT LIMITS (K3, K4) AND DETERMINES
C          K0  SO THAT THE PROBABILITY FUNCTION (P) IS LINED UP TO START AT
C          THE INMATES ADMISSION DATE.  IF  K3  IS GREATER THAN THE
C          ADMISSION MONTH, THEN EACH PROBABILITY FROM  K3  TO  K4  IS
C          DIVIDED BY THE PROBABILITY FOR THE MONTH BEFORE  K3  (REQUIRING
C          THAT THIS NEW PROBABILITY (Q) BE NO GREATER THAN  1)  AND THEN
C          POP  IS INCREMENTED BY THIS NEW CONDITIONAL PROBABILITY (Q).
C          (THE NUMBERS ARE NOT ROUNDED OFF UNTIL THE FINAL STEP.)
      K3=MINMO
      GO TO 35
   31 K3=BEGMO
   35 K0=K3-ADMMO
      K4=MAXMO
      IF(K4.LT.K3)GO TO 37
      D=1
```

```
      IF(K0.GT.0)D=P(K0)
      IF(D.EQ.0)D=1
      DO 36 J=K3,K4
      K=J-ADMMO+1
      Q(J)=P(K)/D
      IF(Q(J).GT.1)Q(J)=1
   36 POP(L,J)=POP(L,J)+Q(J)
C          INPOP - THE STATUS POPULATION AT THE BEGINNING OF THE
C               SIMULATION PERIOD.
C          ADM(J) - THE NUMBER OF MONTHLY ADMISSIONS.
C          INPOP  OR  ADM(J)  IS INCREMENTED BY  1  AS APPROPRIATE
C          AND THEN THE PROGRAM GOES TO READ THE NEXT RECORD.
   37 IF(L.EQ.1)INPOP=INPOP+1
      IF(L.GE.2)ADM(BEGMO)=ADM(BEGMO)+1
      GO TO 4
C          INCREMENT  I  TO CONSIDER THE NEXT LENGTH-OF-SENTENCE CLASS
C          (SENT).  BACKSPACE IN ORDER TO REREAD THE FIRST RECORD OF THIS
C          CLASS.  IF THE CLASS IS DEATH, READ THE RECORD DIRECTLY.
C          OTHERWISE, READ THE NEXT PROBABILITY FUNCTION.
   61 I=I+1
      BACKSPACE 2
      IF(I.EQ.15)GO TO 4
      GO TO 62
C          AFTER ALL OF THE RECORDS HAVE BEEN READ AND ANALYZED,
C          INDEX THE MONTHS AND YEARS FOR THE PRINT OUT.
    1 DO 16 I=1,6
      MO(I)=I+6
   16 YR(I)=IYR
      DO 17 I=7,12
      MO(I)=I-6
   17 YR(I)=IYR+1
      DO 19 I=13,I6
      MO(I)=MO(I-12)
   19 YR(I)=YR(I-12)+1
C          TO GET THE PROJECTED ADMISSIONS, MULTIPLY THE LAST YEAR'S
C          MONTHLY ADMISSIONS (ADM) BY THE APPROPRIATE ADMISSION
C          FACTOR (ADMFACT).
      DO 81 I=I4,I3
```

```
      K=12*(I-1)+1
      KP=K+11
      DO 81 J=K,KP
      L=J-12*(I-I1)
   81 ADM(J)=ADM(L)*ADMFACT(I)
C           TO GET THE OFFICIAL ADMISSIONS DURING THE SIMULATION PERIOD,
C           MULTIPLY EACH YEAR'S MONTHLY ADMISSIONS (ADM) BY THAT YEAR'S
C           ADMISSION FACTOR (ADMFACT).
      DO 82 I=1,I1
      K=12*(I-1)+1
      KP=K+11
      DO 82 J=K,KP
   82 ADM(J)=ADM(J)*ADMFACT(I)
C           MULTIPLY THE POPULATION (POP) FOR THOSE ADMITTED BEFORE THE
C           CUT  BY THE STATUS FACTOR (STFACT), MULTIPLY THE POPULATION (POP)
C           FOR THOSE ADMITTED AFTER THE  CUT  BY THE APPROPRIATE ADMISSION
C           FACTOR (ADMFACT), AND ADD FOR EACH MONTH.
      DO 83 J=1,I6
      POP(1,J)=POP(1,J)*STFACT
      DO 83 K=1,I1
      L=K+1
   83 POP(1,J)=POP(1,J)+POP(L,J)*ADMFACT(K)
C           TAKE THE MONTHLY POPULATIONS FOR THE LAST YEAR'S ADMISSION
C           POP(I4,I),  SLIDE THEM OVER TO EACH YEAR BEING PROJECTED,
C           MULTIPLY BY THAT YEAR'S ADMISSION FACTOR (ADMFACT), AND
C           ADD FOR EACH MONTH TO GET THE TOTAL MONTHLY POPULATION.
      DO 80 I=I4,I3
      K=12*(I-1)+1
      DO 80 J=K,I6
      L=J-12*(I-I1)
   80 POP(1,J)=POP(1,J)+POP(I4,L)*ADMFACT(I)
C           MULTIPLY THE INITIAL POPULATION (INPOP) BY THE STATUS
C           FACTOR (STFACT) TO GET THE OFFICIAL STATUS POPULATION.
      XPOP=INPOP*STFACT
C           COMPUTE THE NUMBER OF RELEASES (REL).
      REL(1)=XPOP+ADM(1)-POP(1,1)
      DO 84 I=2,I6
   84 REL(I)=POP(1,I-1)+ADM(I)-POP(1,I)
```

```
C           ADJUST THE RELEASES TO COMPENSATE FOR DISCONTINUING
C           2 MONTH EARLY RELEASES.
      DO 85 J=66,I6
      I=I6+66-J
   85 REL(I)=REL(I-2)*.2667+REL(I-1)*.1217+REL(I)*.6117
      REL(65)=REL(65)*.6117
      REL(64)=REL(64)*.7333
C           ADJUST RELEASES DUE TO EARLY RELEASE WHEN THE FIRST OF THE
C           MONTH FELL ON A WEEKEND OR A HOLIDAY BEFORE JUNE, 1978.
      DO 70 I=2,60
      IF((YR(I).EQ.1973)
     +.AND.(MO(I).EQ.1.OR.MO(I).EQ.4
     +.OR.MO(I).EQ.7.OR.MO(I).EQ.9.OR.MO(I).EQ.12))GO TO 71
      IF((YR(I).EQ.1974)
     +.AND.(MO(I).EQ.1.OR.MO(I).EQ.6
     +.OR.MO(I).EQ.9.OR.MO(I).EQ.12))GO TO 71
      IF((YR(I).EQ.1975)
     +.AND.(MO(I).EQ.1.OR.MO(I).EQ.2.OR.MO(I).EQ.3.OR.MO(I).EQ.6
     +.OR.MO(I).EQ.9.OR.MO(I).EQ.11))GO TO 71
      IF((YR(I).EQ.1976).AND.(MO(I).EQ.1.OR.MO(I).EQ.2
     +.OR.MO(I).EQ.5.OR.MO(I).EQ.8))GO TO 71
      IF((YR(I).EQ.1977)
     +.AND.(MO(I).EQ.1.OR.MO(I).EQ.5.OR.MO(I).EQ.10))GO TO 71
      IF((YR(I).EQ.1978)
     +.AND.(MO(I).EQ.1.OR.MO(I).EQ.4))
     +GO TO 71
      GO TO 70
   71 XREL=.4*REL(I)
      REL(I-1)=REL(I-1)+XREL
      REL(I)=REL(I)-XREL
   70 CONTINUE
C           COMPUTE THE POPULATION (POP) AFTER ADJUSTING THE RELEASES.
      POP(1,1)=XPOP+ADM(1)-REL(1)
      DO 22 I=2,I6
   22 POP(1,I)=POP(1,I-1)+ADM(I)-REL(I)
C           ROUND OFF ADMISSIONS (NADM), POPULATION (NPOP),AND
C           RELEASES (NREL).
      DO 40 I=1,I6
```

```
      NADM(I)=ADM(I)+.5
   40 NPOP(I)=POP(1,I)+.5
      IPOP=XPOP+.5
      NREL(1)=IPOP+NADM(1)-NPOP(1)
      DO 41 I=2,I6
   41 NREL(I)=NPOP(I-1)+NADM(I)-NPOP(I)
C          READ IN THE ACTUAL PRISON POPULATION (ACTUAL) FOR THE
C          SIMULATION PERIOD, THE NUMBER OF CONTRACT JAIL BEDS (CJB)
C          DURING THIS PERIOD AND AS PROJECTED IN THE FUTURE, AND THE
C          ESTIMATED JAIL BACKLOG (EJB) DURING THIS PERIOD.  COMPUTE THE
C          PROJECTED RELEASES (NRELCJB) BASED ON THE PROJECTED
C          POPULATION INCLUDING THE CONTRACT JAIL BEDS (NPOPCJB).  ADD THE
C          NUMBER OF CONTRACT JAIL BEDS (CJB) TO THE PROJECTED POPULATION
C          (NPOP), AND COMPUTE THE ERROR IN PROJECTION (ERRCJB).
      READ (3,302)NN,(ACTUAL(I),I=1,NN)
      READ (3,302)NM,(CJB(I),I=1,NM)
      READ (3,303)(EJB(I),I=1,NN)
      NM1=NM+1
      DO 51 I=NM1,I6
   51 CJB(I)=CJB(NM)
      NRELCJB(1)=NREL(1)
      DO 54 I=2,I6
   54 NRELCJB(I)=NREL(I)-CJB(I)+CJB(I-1)
      DO 50 I=1,I6
   50 NPOPCJB(I)=NPOP(I)+CJB(I)
      DO 52 I=1,NN
      ACTCJB(I)=ACTUAL(I)+CJB(I)
   52 ERRCJB(I)=NPOPCJB(I)-ACTCJB(I)
C          THIS SECTION ADJUSTS THE PROJECTIONS SO THAT THE ERROR IS
C          ZERO AT THE START OF THE PROJECTIONS.
      NN1=NN+1
      DO 55 I=NN1,I6
      NPOP(I)=NPOP(I)-ERRCJB(NN)
   55 NPOPCJB(I)=NPOPCJB(I)-ERRCJB(NN)
C          THE ESTIMATED JAIL BACKLOG HAS STABILIZED AT ABOUT
C          1.8 WEEKS ADMISSIONS.  ADD THIS TO THE PROJECTED
C          POPULATION WITH THE CONTRACT JAIL BEDS AND COMPUTE
C          THIS ERROR IN PROJECTION (ERR).
```

```
      DO 57 I=1,I2
      IADM=0
      DO 58 J=1,12
      K=12*(I-1)+J
   58 IADM=IADM+NADM(K)
      DO 57 J=1,12
      K=12*(I-1)+J
   57 NPOPEJB(K)=NPOPCJB(K)+1.8*IADM/52+.5
      DO 59 I=1,NN
      ACTEJB(I)=ACTCJB(I)+EJB(I)
   59 ERREJB(I)=NPOPEJB(I)-ACTEJB(I)
C          WRITE THE SHORT TERM PROJECTIONS.
      WRITE(4,401)IYR,IPOP,(MO(I),YR(I),NADM(I),NREL(I),NPOP(I),
     +NRELCJB(I),NPOPCJB(I),ACTCJB(I),ERRCJB(I),NPOPEJB(I),ACTEJB(I),
     +ERREJB(I),I=1,NN)
      IF(NN.GE.I5)GO TO 53
      WRITE(4,402)(MO(I),YR(I),NADM(I),NREL(I),NPOP(I),NRELCJB(I),
     +NPOPCJB(I),I=NN1,I5)
C          CONVERT TO ANNUAL ADMISSIONS AND RELEASES AND
C          WRITE THE LONG TERM PROJECTIONS ON AN ANNUAL BASIS.
   53 DO 90 I=1,I3
      DO 90 J=1,11
      K=12*(I-1)+J+1
      NADM(K)=NADM(K)+NADM(K-1)
      NREL(K)=NREL(K)+NREL(K-1)
   90 NRELCJB(K)=NRELCJB(K)+NRELCJB(K-1)
      WRITE(4,403)IYR,IPOP,(MO(I),YR(I),NADM(I),NREL(I),NPOP(I),
     +NRELCJB(I),NPOPCJB(I),I=12,I6,12)
  101 FORMAT(I3/(12F7.5))
  201 FORMAT(2X,I2,I3,I1,I3)
  301 FORMAT(I4,I2,2I3,/(F7.5,6F8.5))
  302 FORMAT(I2/(I5,11I6))
  303 FORMAT(I5,11I6)
  401 FORMAT(54X,*POPULATION PROJECTIONS*//
     +37X,*USING PROBABILITY FUNCTIONS FOR LENGTH OF SENTENCE GROUPS*//
     +39X,*CONTRACT JAIL BEDS (CJB) ARE ADDED TO THE POPULATION*////
     +12X,*PROJECTED   PROJECTED   PROJECTED   PROJECTED*,
     +3X,*PROJECTED   ACTUAL     OVER(UNDER)  PROJECTED*,
```

```
     +3X,*ACTUAL      OVER(UNDER)*/
     +1X,*DATE*,7X,*ADMISSIONS  RELEASES    POPULATION*,
     +2X,*REL (CJB)   POP + CJB   POP + CJB  POP + CJB*,
     +4X,*POP + EJB   POP + EJB  POP + EJB*
     +//1X,*6/*,I4,31X,I5/
     +(/I2,*/*,I4,7X,I5,7X,I5,7X,I5,7X,I5,7X,I5,
     +7X,I5,7X,I5,7X,I5,7X,I5,7X,I5))
402  FORMAT(/I2,*/*,I4,7X,I5,7X,I5,7X,I5,7X,I5,7X,I5)
403  FORMAT(/1X,*6/*,I4,31X,I5/(/I2,*/*,I4,7X,I5,7X,I5,
     +7X,I5,7X,I5,7X,I5))
      STOP$END
```

APPENDIX C

The following Appendix contains graphs and tables of the incarceration probability functions used in the simulation model to account for time already served by those not yet released as well as an estimate of the time that will be served before they are released.

Below each table in this Appendix is given the average time served by inmates in that length-of-sentence class. This average is also on the graph and is labeled $\bar{x}$. Since it is not an average of the monthly probabilities, it does not divide the area under the graph into two nearly equal pieces. Actually, it should intersect the graph close to the point at which the probability is 0.5. In fact, the point at which the probability is 0.5 represents the median time served.

TABLE C-1

INCARCERATION PROBABILITY FUNCTION
For Inmates Serving Sentences of
Less Than 1 Year

	Month 1	2	3	4	5	6	7	8	9	10	11	12
1st Yr	.762	.612	.454	.295	.150	.053	.013	0.000	0.000	0.000	0.000	0.000

The average time served is 2.3 months for 90 inmates.

TABLE C-2

INCARCERATION PROBABILITY FUNCTION
For Inmates Serving Sentences of
1 Year

	Month 1	2	3	4	5	6	7	8	9	10	11	12
1st Yr	.985	.950	.914	.779	.643	.497	.299	.183	.099	.047	.031	.010

The average time served is 5.4 months for 270 inmates.

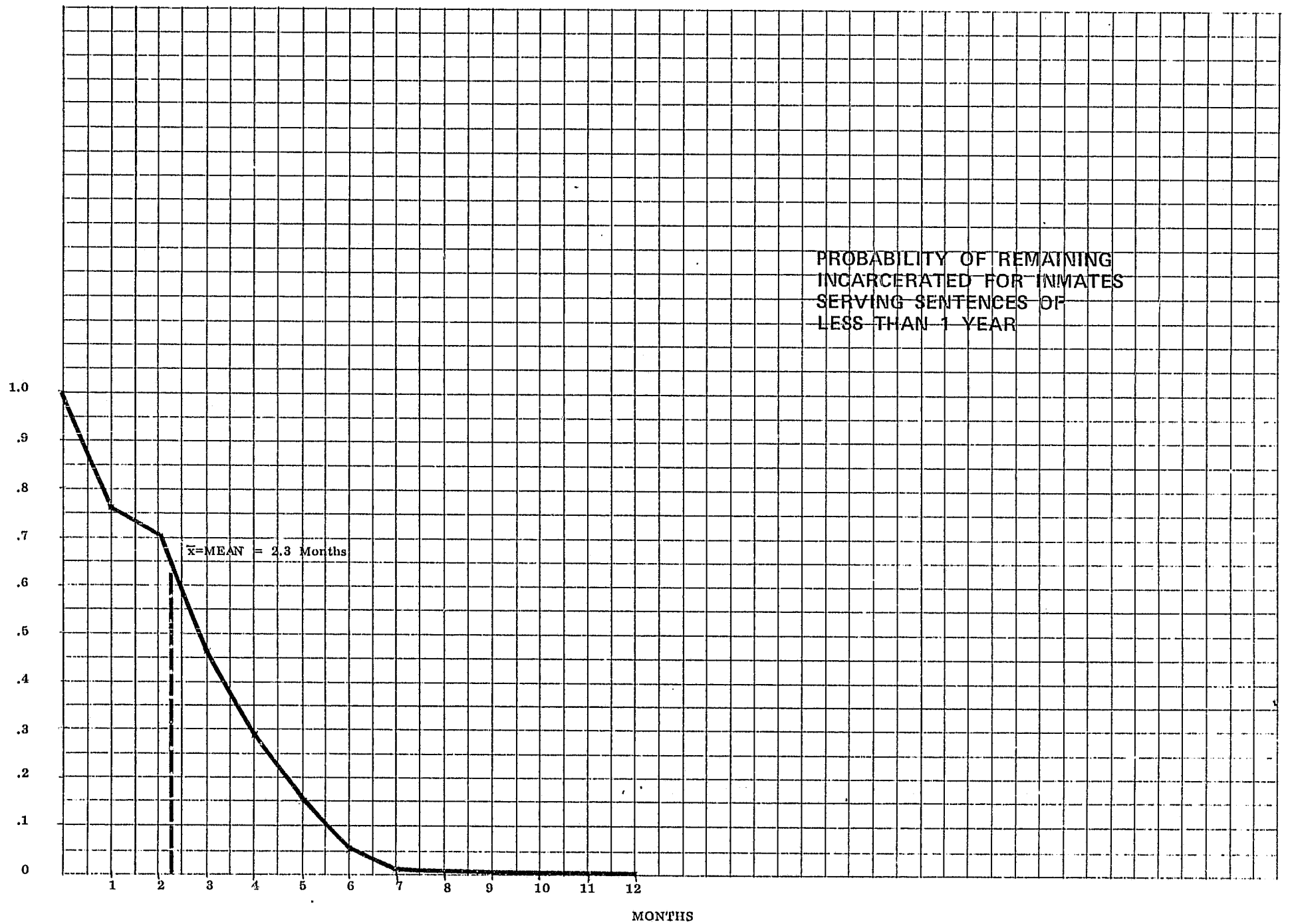

PROBABILITY OF REMAINING INCARCERATED FOR INMATES SERVING SENTENCES OF LESS THAN 1 YEAR
PROBABILITY
1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
x̄=MEAN = 2.3 Months
1
2
3
4
5
6
7
8
9
10
11
12
MONTHS

FIGURE C-1

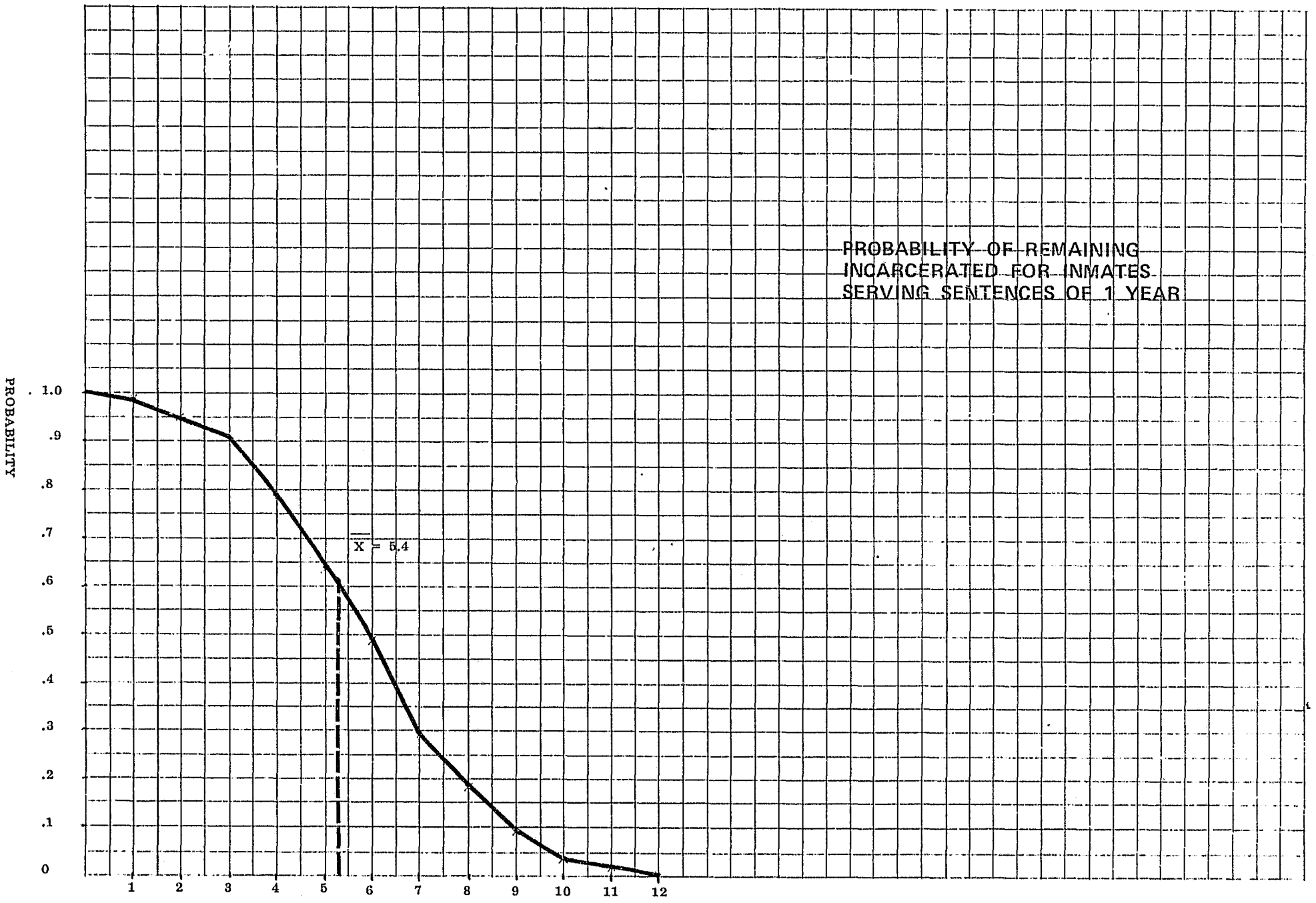

PROBABILITY OF REMAINING INCARCERATED FOR INMATES SERVING SENTENCES OF 1 YEAR
PROBABILITY
1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
X = 5.4
1
2
3
4
5
6
7
8
9
10
11
12
MONTHS

FIGURE C-2

TABLE C-3

INCARCERATION PROBABILITY FUNCTION
For Inmates Serving Sentences of
More Than 1 Year and
Less Than 2 Years

	Month 1	2	3	4	5	6	7	8	9	10	11	12
1st Yr	.993	.979	.967	.933	.894	.824	.725	.594	.444	.347	.244	.165
2nd Yr	.110	.065	.036	.018	.009	.004	0.000	0.000	0.000	0.000	0.000	0.000

The average time served is 8.4 months for 842 inmates.

TABLE C-4

INCARCERATION PROBABILITY FUNCTION
For Inmates Serving Sentences of
2 Years

	Month 1	2	3	4	5	6	7	8	9	10	11	12
1st Yr	.996	.992	.987	.983	.968	.949	.907	.850	.786	.718	.635	.551
2nd Yr	.461	.371	.292	.225	.164	.110	.071	.041	.028	.018	.010	.002

The average time served is 12.1 months for 1386 inmates.

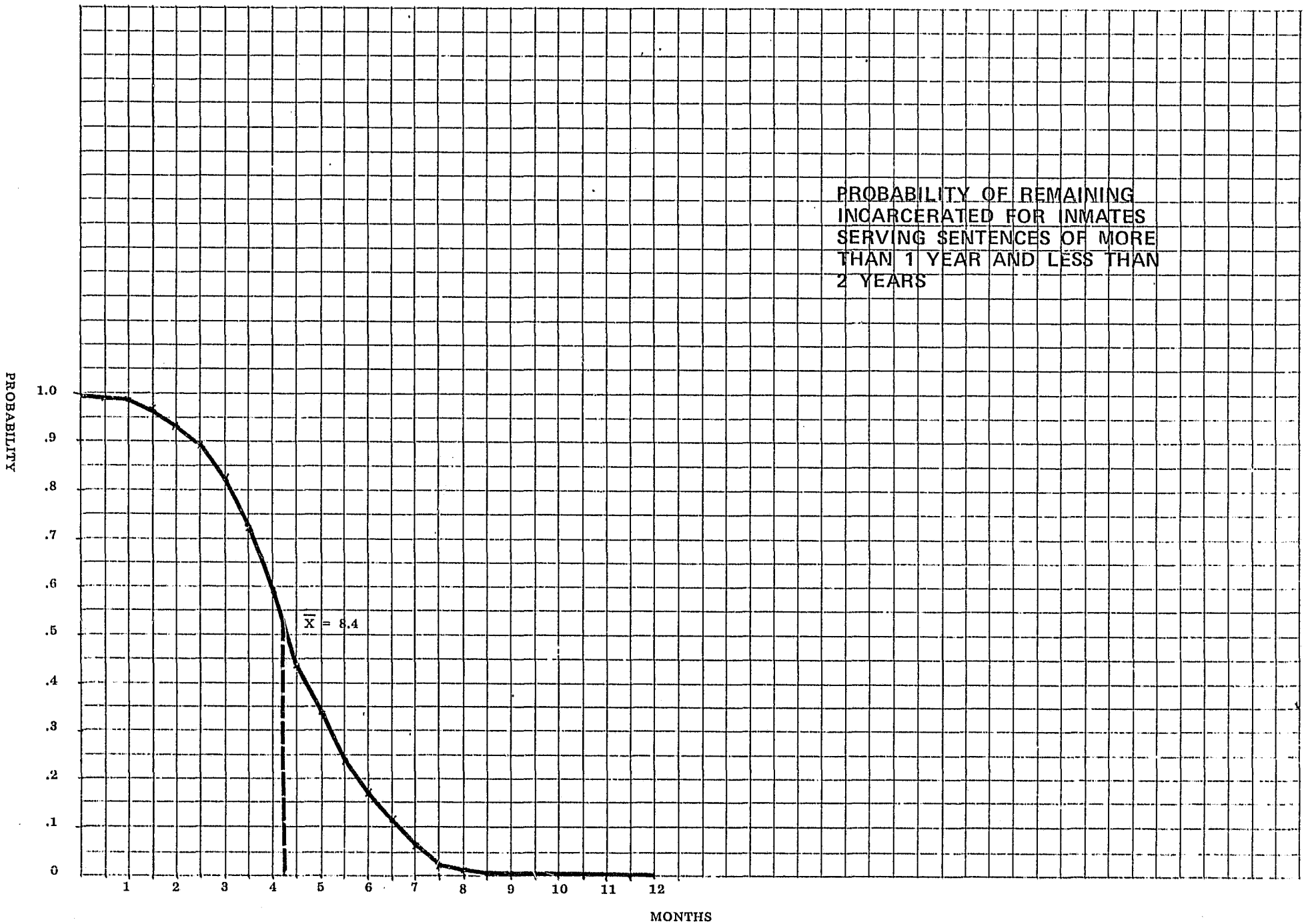

PROBABILITY OF REMAINING INCARCERATED FOR INMATES SERVING SENTENCES OF MORE THAN 1 YEAR AND LESS THAN 2 YEARS
PROBABILITY
1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
$\overline{X}$ = 8.4
1
2
3
4
5
6
7
8
9
10
11
12
MONTHS

FIGURE C-3

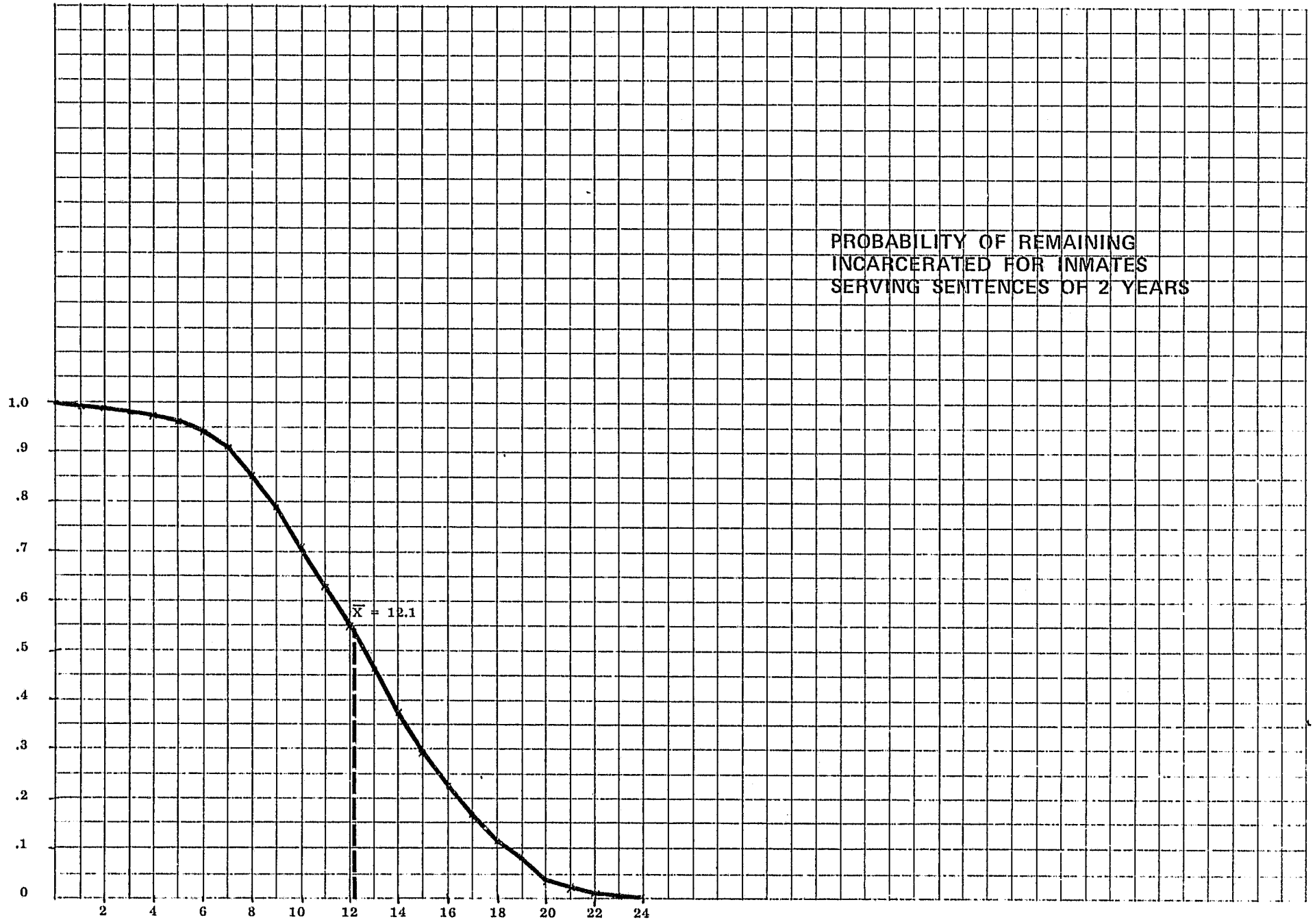

PROBABILITY OF REMAINING
INCARCERATED FOR INMATES
SERVING SENTENCES OF 2 YEARS
PROBABILITY
1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
$\bar{X}$ = 12.1
2
4
6
8
10
12
14
16
18
20
22
24
MONTHS

FIGURE C-4

TABLE C-5

INCARCERATION PROBABILITY FUNCTION
For Inmates Serving Sentences of
More Than 2 Years and
Less Than 3 Years

	Month 1	2	3	4	5	6	7	8	9	10	11	12
1st Yr	1.000	.997	.996	.994	.994	.983	.974	.958	.928	.903	.840	.769
2nd Yr	.698	.635	.568	.457	.400	.325	.279	.223	.184	.117	.075	.063
3rd Yr	.036	.023	.015	.009	.004	.004	0.000	0.000	0.000	0.000	0.000	0.000

The average time served is 15.5 months for 326 inmates.

TABLE C-6

INCARCERATION PROBABILITY FUNCTION
For Inmates Serving Sentences of
3 Years

	Month 1	2	3	4	5	6	7	8	9	10	11	12
1st Yr	.997	.994	.991	.988	.986	.979	.972	.959	.946	.926	.905	.868
2nd Yr	.808	.745	.686	.623	.559	.498	.437	.384	.339	.272	.225	.184
3rd Yr	.145	.111	.083	.059	.043	.027	.019	.013	.010	.006	.004	.001

The average time served is 17.8 months for 2096 inmates.

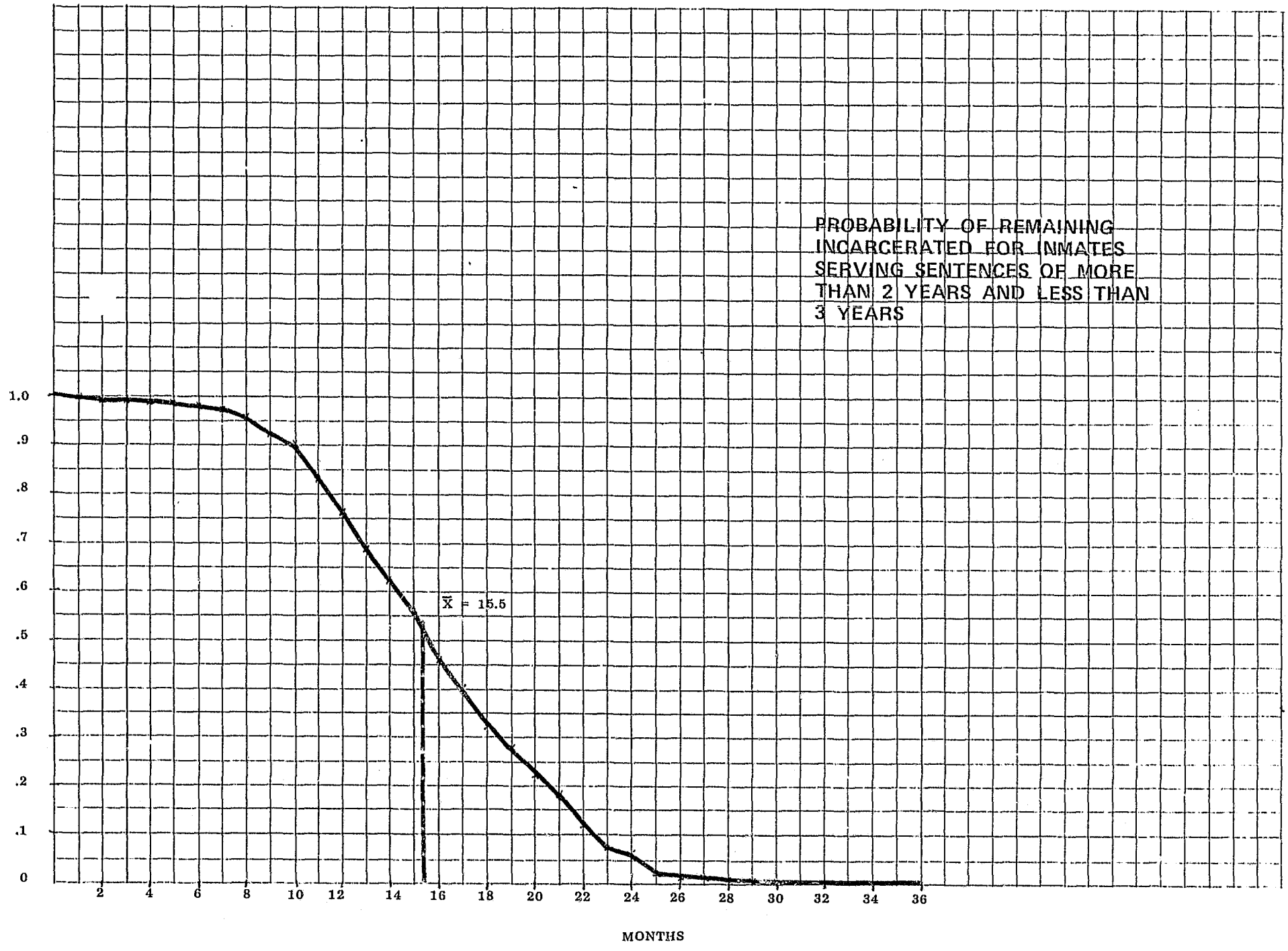

PROBABILITY OF REMAINING INCARCERATED FOR INMATES SERVING SENTENCES OF MORE THAN 2 YEARS AND LESS THAN 3 YEARS
PROBABILITY
1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
$\bar{X}$ = 15.5
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
MONTHS

FIGURE C-5

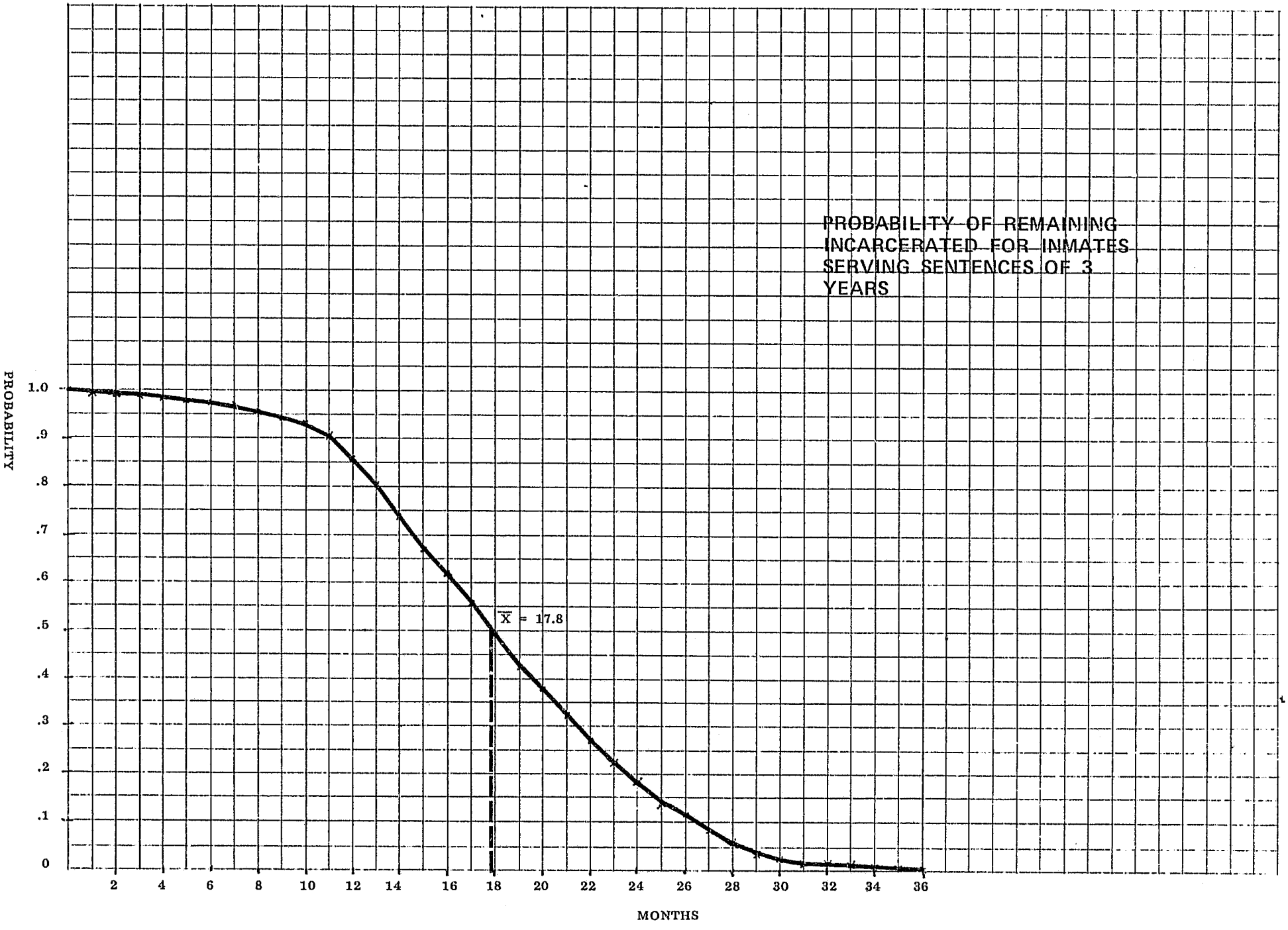

PROBABILITY OF REMAINING INCARCERATED FOR INMATES SERVING SENTENCES OF 3 YEARS
PROBABILITY
1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
$\overline{X}$ = 17.8
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
MONTHS

FIGURE C-6

TABLE C-7

INCARCERATION PROBABILITY FUNCTION
For Inmates Serving Sentences of
More Than 3 Years and
Less Than 5 Years

	Month 1	2	3	4	5	6	7	8	9	10	11	12
1st Yr	.998	.996	.987	.985	.981	.976	.973	.969	.966	.960	.953	.944
2nd Yr	.937	.919	.896	.865	.835	.777	.728	.686	.639	.587	.543	.490
3rd Yr	.434	.397	.350	.304	.278	.249	.221	.177	.143	.126	.102	.077
4th Yr	.063	.048	.040	.030	.018	.015	.013	.010	.008	.009	.004	.001

The average time served is 23.7 months for 677 inmates.

TABLE C-8

INCARCERATION PROBABILITY FUNCTION
For Inmates Serving Sentences of
5 Years

	Month 1	2	3	4	5	6	7	8	9	10	11	12
1st Yr	.998	.996	.994	.990	.989	.987	.985	.980	.978	.973	.969	.963
2nd Yr	.953	.944	.931	.916	.900	.868	.838	.810	.779	.746	.720	.675
3rd Yr	.628	.584	.543	.499	.462	.427	.389	.356	.317	.284	.246	.215
4th Yr	.175	.146	.111	.089	.066	.051	.038	.029	.021	.017	.014	.015
5th Yr	.013	.013	.014	.013	.009	.006	.003	.002	.002	.000	.000	0.000

The average time served is 27.7 months for 2583 inmates.

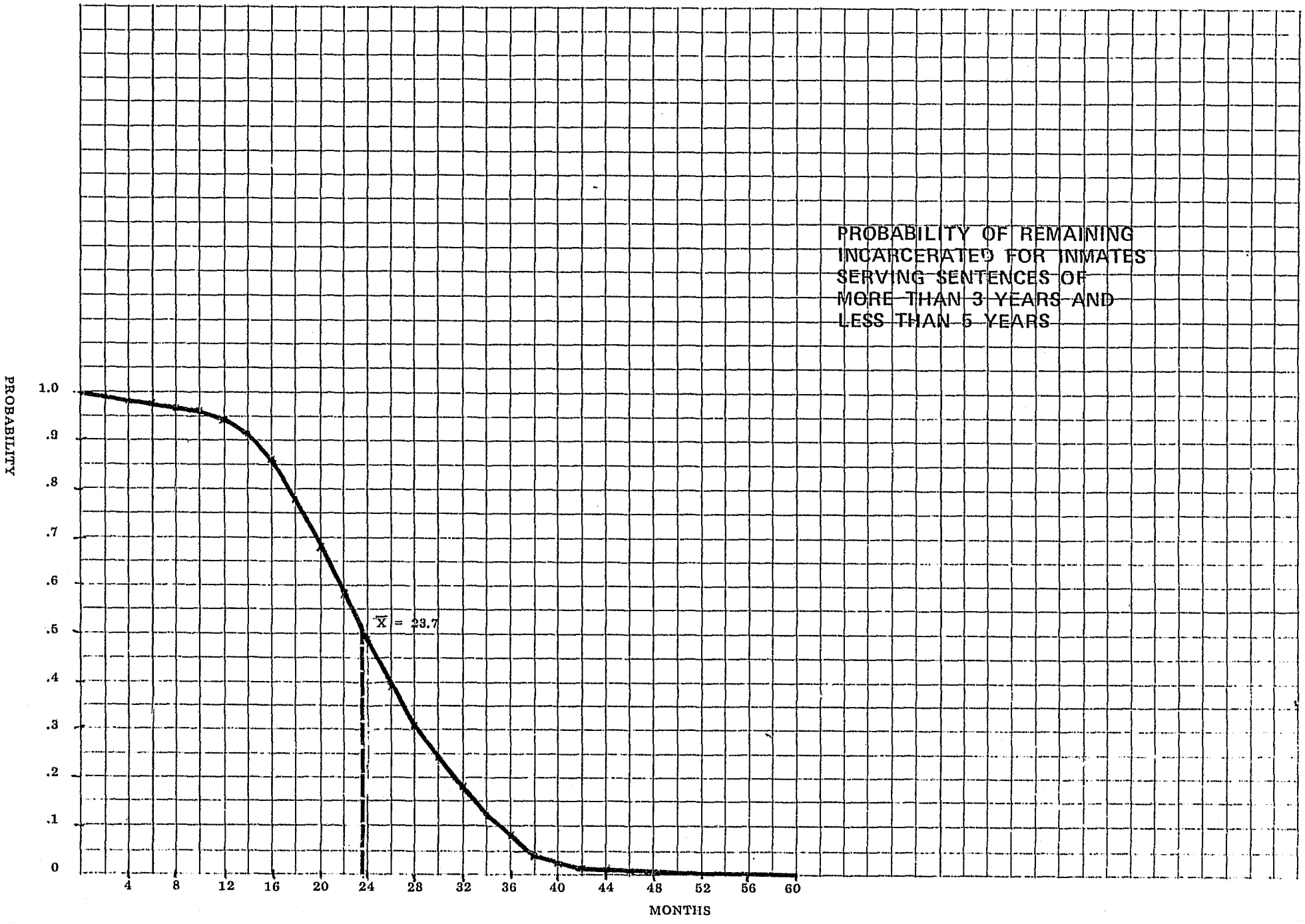

PROBABILITY OF REMAINING INCARCERATED FOR INMATES SERVING SENTENCES OF MORE THAN 3 YEARS AND LESS THAN 5 YEARS
PROBABILITY
1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
$\overline{X}$ = 23.7
4
8
12
16
20
24
28
32
36
40
44
48
52
56
60
MONTHS

FIGURE C-7

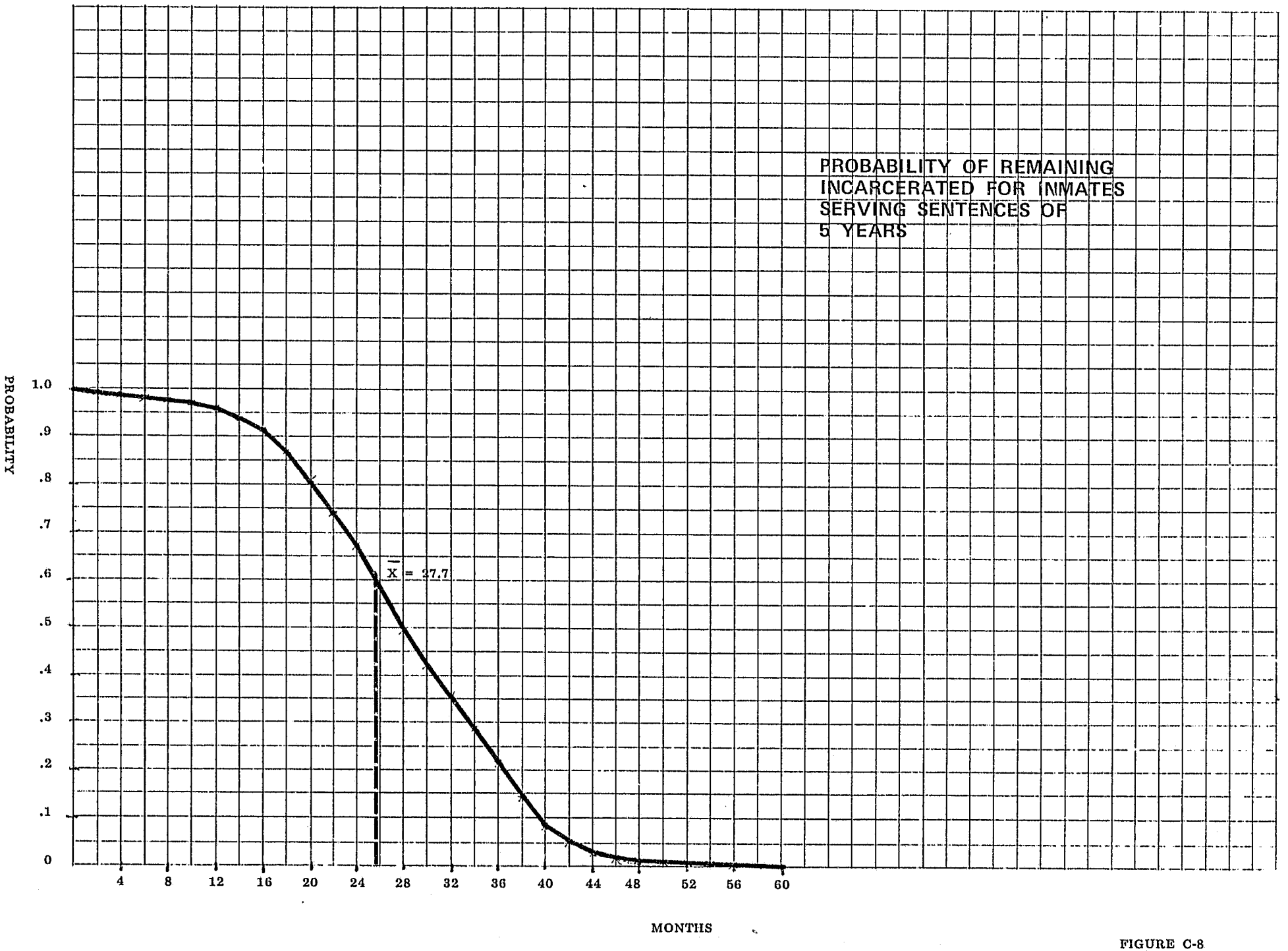

PROBABILITY OF REMAINING INCARCERATED FOR INMATES SERVING SENTENCES OF 5 YEARS
PROBABILITY
1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
$\bar{X}$ = 27.7
4
8
12
16
20
24
28
32
36
40
44
48
52
56
60
MONTHS

FIGURE C-8

CONTINUED

1 OF 2

TABLE C-9

INCARCERATION PROBABILITY FUNCTION
For Inmates Serving Sentences of
More Than 5 Years and
Less Than 10 Years

	Month 1	2	3	4	5	6	7	8	9	10	11	12
1st Yr	1.000	1.000	.998	.996	.995	.995	.994	.993	.992	.989	.986	.984
2nd Yr	.979	.975	.971	.967	.965	.961	.947	.944	.937	.930	.915	.880
3rd Yr	.862	.838	.808	.776	.747	.715	.686	.663	.629	.605	.579	.552
4th Yr	.530	.485	.438	.408	.385	.357	.335	.310	.284	.263	.228	.203
5th Yr	.183	.158	.136	.126	.118	.113	.095	.077	.058	.054	.043	.034
6th Yr	.027	.025	.023	.018	.019	.015	.015	.013	.009	.009	.007	.007
7th Yr	.007	.004	.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

The average time served is 37.4 months for 782 inmates.

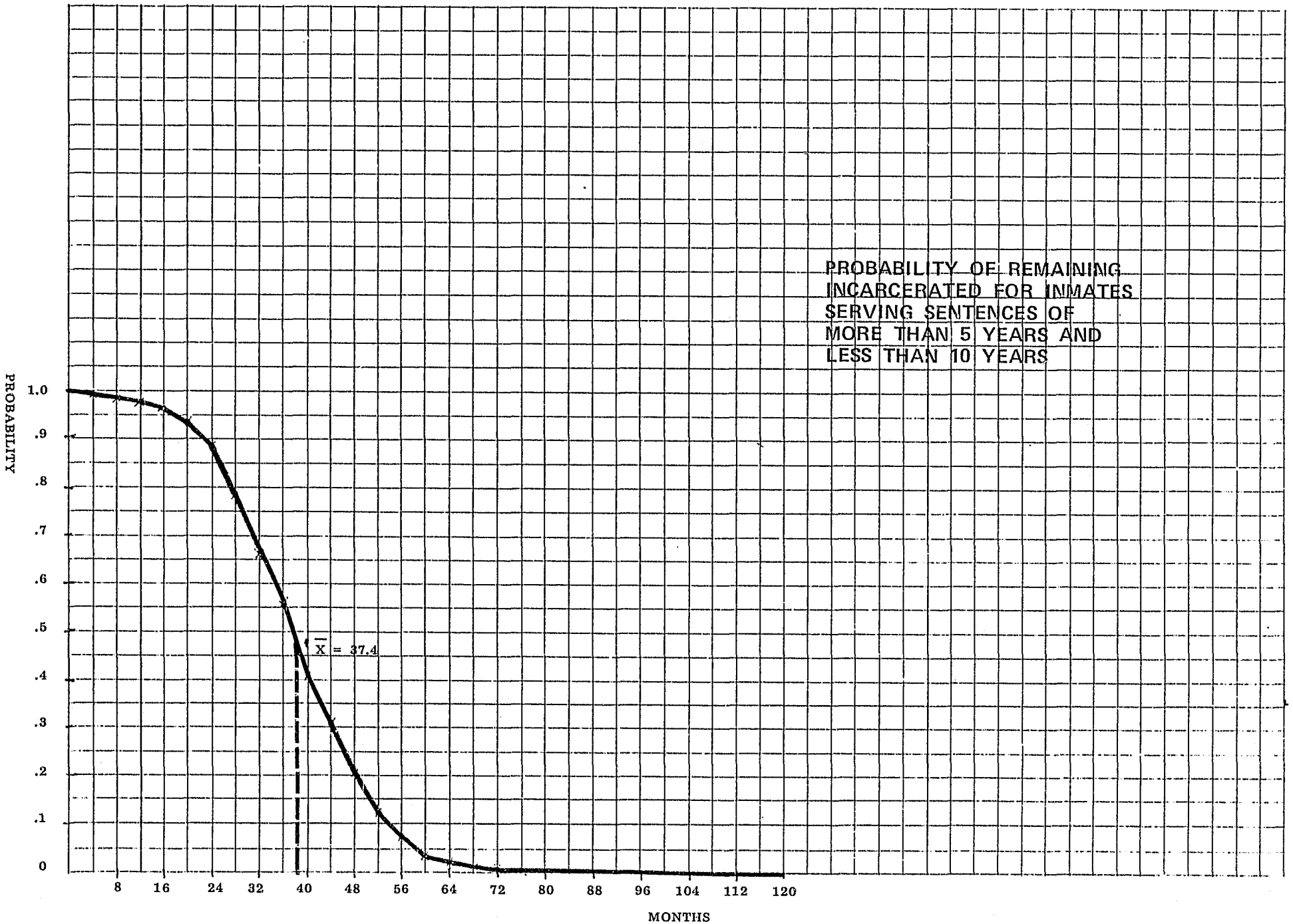

PROBABILITY OF REMAINING INCARCERATED FOR INMATES SERVING SENTENCES OF MORE THAN 5 YEARS AND LESS THAN 10 YEARS
PROBABILITY
1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
$\bar{X}$ = 37.4
8
16
24
32
40
48
56
64
72
80
88
96
104
112
120
MONTHS

FIGURE C-9

TABLE C-10

INCARCERATION PROBABILITY FUNCTION
For Inmates Serving Sentences of
10 Years

	Month 1	2	3	4	5	6	7	8	9	10	11	12
1st Yr	1.000	.999	.998	.996	.994	.991	.991	.989	.988	.987	.986	.985
2nd Yr	.984	.983	.981	.978	.971	.969	.968	.964	.964	.958	.950	.939
3rd Yr	.928	.921	.912	.901	.688	.868	.859	.852	.834	.814	.795	.759
4th Yr	.737	.715	.687	.657	.630	.608	.589	.574	.561	.535	.522	.503
5th Yr	.478	.457	.441	.434	.419	.409	.392	.366	.348	.322	.305	.286
6th Yr	.261	.240	.220	.192	.171	.141	.132	.123	.114	.098	.090	.080
7th Yr	.071	.068	.058	.054	.049	.046	.035	.032	.032	.027	.024	.024
8th Yr	.019	.011	.011	.011	.011	.008	.005	.005	.005	.005	0.000	0.000

The average time served is 48.3 months for 1050 inmates.

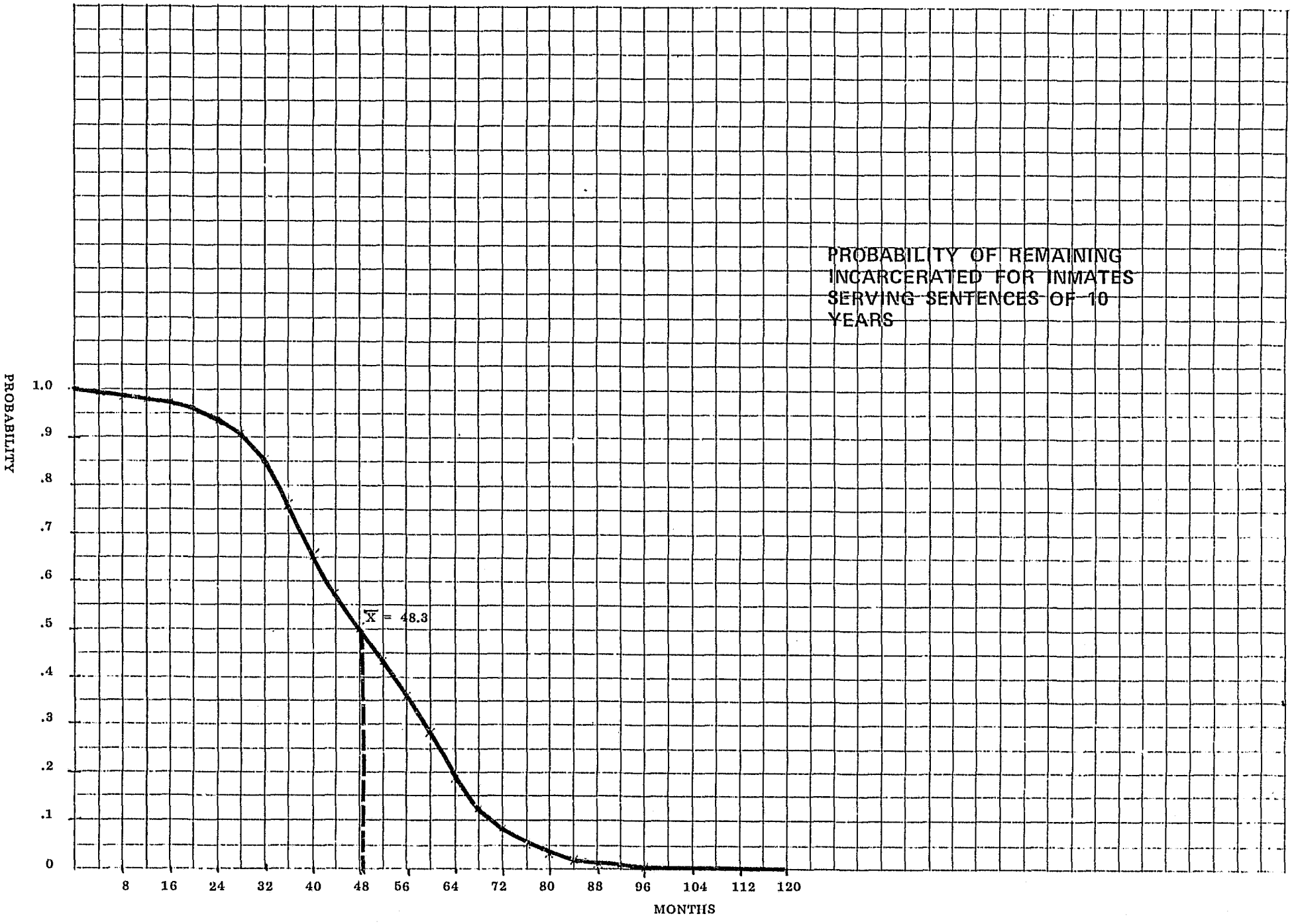

PROBABILITY OF REMAINING INCARCERATED FOR INMATES SERVING SENTENCES OF 10 YEARS
PROBABILITY
1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
$\overline{X}$ = 48.3
8
16
24
32
40
48
56
64
72
80
88
96
104
112
120
MONTHS

FIGURE C-10

TABLE C-11

INCARCERATION PROBABILITY FUNCTION
For Inmates Serving Sentences of
More Than 10 Years and
Less Than or Equal to 15 Years

	Month 1	2	3	4	5	6	7	8	9	10	11	12
1st Yr	1.000	1.000	1.000	1.000	.997	.995	.994	.988	.986	.983	.982	.981
2nd Yr	.980	.977	.978	.975	.974	.968	.965	.965	.965	.959	.959	.958
3rd Yr	.957	.952	.948	.946	.944	.940	.930	.923	.915	.912	.909	.901
4th Yr	.891	.883	.869	.853	.842	.822	.800	.791	.782	.768	.757	.745
5th Yr	.724	.705	.677	.654	.626	.605	.579	.574	.557	.541	.519	.520
6th Yr	.501	.474	.452	.431	.413	.401	.402	.375	.366	.365	.356	.348
7th Yr	.324	.300	.293	.283	.283	.278	.259	.259	.240	.210	.205	.189
8th Yr	.188	.188	.174	.164	.153	.132	.115	.104	.098	.091	.086	.080
9th Yr	.074	.056	.049	.043	.043	.037	.031	.037	.037	.031	.019	.019
10th Yr	.012	.012	.012	.006	.006	0.000	0.000	.006	.006	.006	.006	.006
11th Yr	.006	.006	.006	.006	.006	.006	.006	.006	.006	.006	.006	.006
12th Yr	.006	.006	.006	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

The average time served is 62.1 months for 847 inmates.

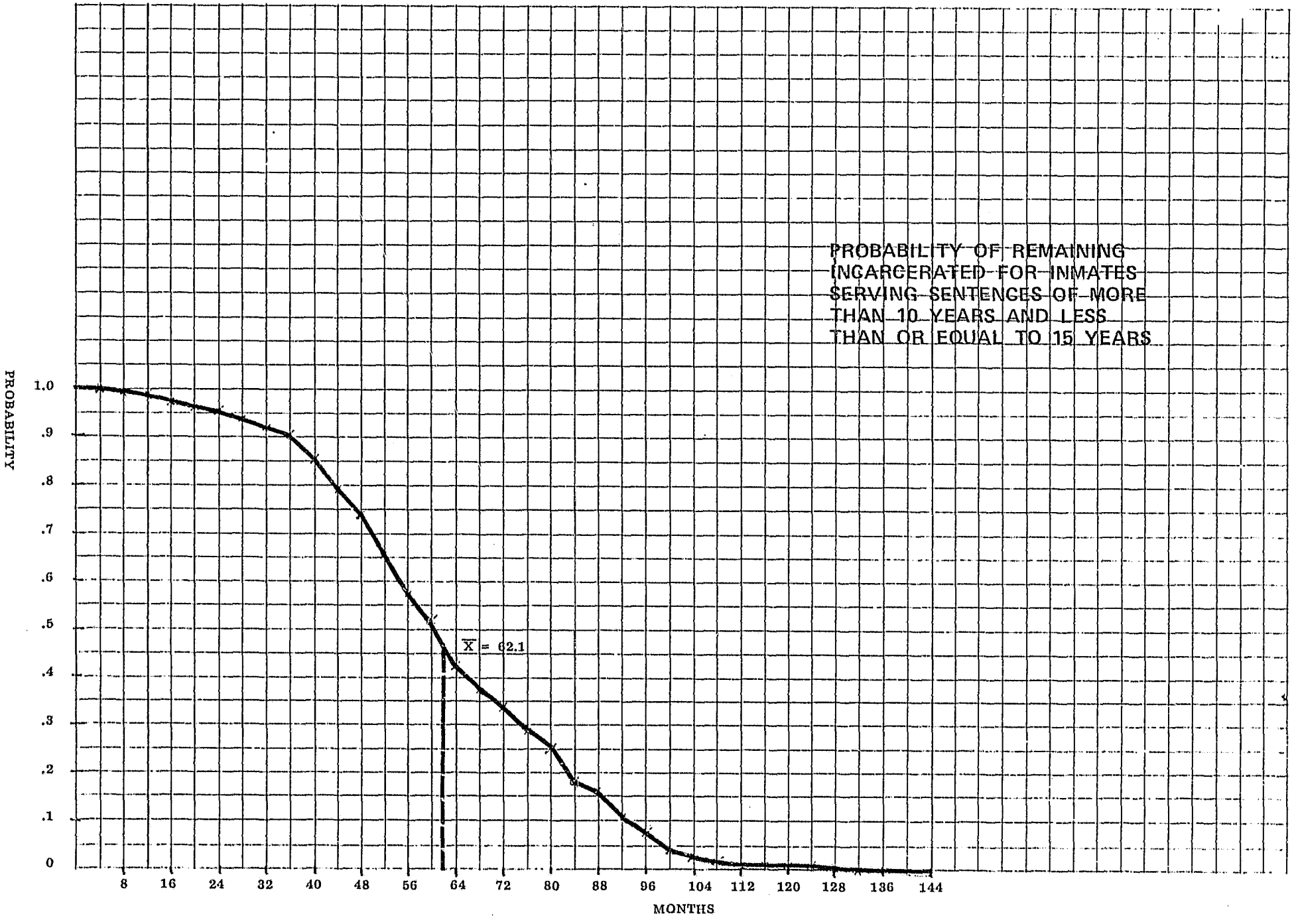

PROBABILITY OF REMAINING INCARCERATED FOR INMATES SERVING SENTENCES OF MORE THAN 10 YEARS AND LESS THAN OR EQUAL TO 15 YEARS
PROBABILITY
1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
X̄ = 62.1
8
16
24
32
40
48
56
64
72
80
88
96
104
112
120
128
136
144
MONTHS

FIGURE C-11

TABLE C-12

INCARCERATION PROBABILITY FUNCTION
For Inmates Serving Sentences of
More Than 15 Years and
Less Than or Equal to 20 Years

	Month 1	2	3	4	5	6	7	8	9	10	11	12
1st Yr	1.000	1.000	.994	.994	.994	.994	.994	.994	.994	.994	.984	.981
2nd Yr	.982	.982	.978	.978	.978	.974	.970	.970	.966	.966	.957	.953
3rd Yr	.953	.953	.953	.945	.944	.946	.942	.943	.940	.934	.936	.924
4th Yr	.915	.913	.907	.907	.903	.898	.897	.883	.881	.870	.866	.843
5th Yr	.827	.820	.803	.804	.798	.790	.778	.755	.741	.716	.687	.671
6th Yr	.662	.654	.647	.631	.621	.596	.600	.563	.554	.552	.537	.532
7th Yr	.512	.492	.479	.471	.465	.462	.466	.451	.433	.427	.422	.406
8th Yr	.393	.377	.383	.366	.343	.346	.351	.346	.344	.341	.327	.322
9th Yr	.299	.292	.286	.269	.253	.253	.245	.231	.221	.212	.205	.191
10th Yr	.182	.171	.176	.159	.153	.137	.126	.114	.102	.097	.085	.085
11th Yr	.091	.091	.080	.074	.074	.068	.068	.068	.056	.044	.044	.037
12th Yr	.037	.037	.037	.037	.037	.031	.031	.025	.025	.012	.006	.006
13th Yr	.006	.006	0.000	0.000	.006	.012	.012	.012	.012	.012	.012	.012
14th Yr	.012	.012	.012	.012	.006	.006	.006	.006	0.000	0.000	0.000	0.000

The average time served is 77.6 months for 338 inmates.

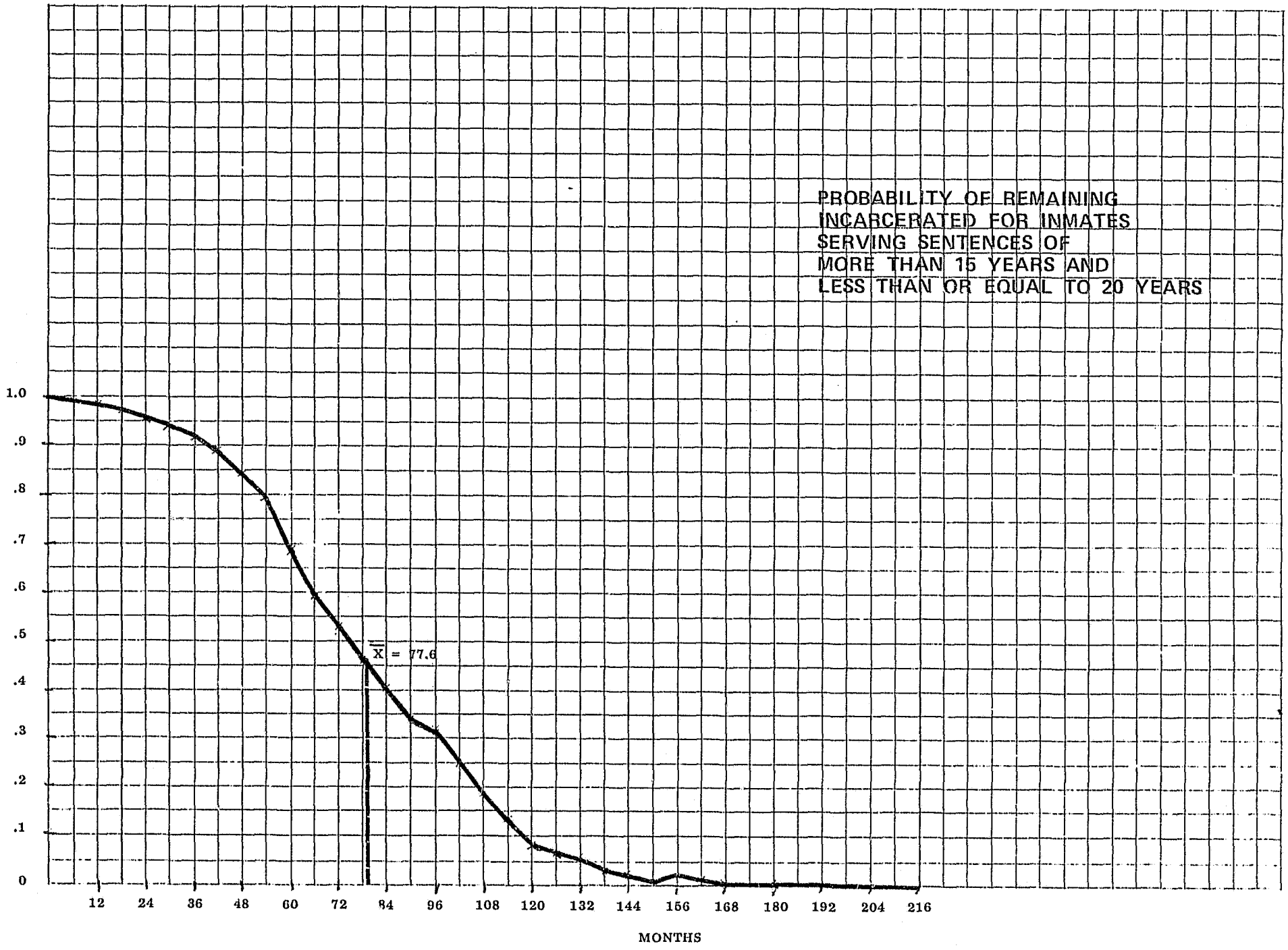

PROBABILITY OF REMAINING INCARCERATED FOR INMATES SERVING SENTENCES OF MORE THAN 15 YEARS AND LESS THAN OR EQUAL TO 20 YEARS
PROBABILITY
1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
$\overline{X}$ = 77.6
12
24
36
48
60
72
84
96
108
120
132
144
156
168
180
192
204
216
MONTHS

FIGURE C-12

TABLE C-13

INCARCERATION PROBABILITY FUNCTION
For Inmates Serving Sentences of
More Than 20 Years

	Month 1	2	3	4	5	6	7	8	9	10	11	12
1st Yr	1.000	1.000	1.000	.998	.998	.995	.995	.993	.991	.989	.986	.983
2nd Yr	.980	.978	.976	.969	.966	.964	.963	.963	.961	.960	.955	.954
3rd Yr	.949	.948	.948	.943	.940	.939	.938	.937	.935	.932	.933	.927
4th Yr	.926	.924	.924	.923	.920	.916	.914	.914	.909	.907	.905	.900
5th Yr	.896	.897	.893	.894	.889	.890	.886	.877	.879	.877	.860	.858
6th Yr	.844	.832	.812	.802	.803	.791	.775	.762	.750	.746	.731	.721
7th Yr	.721	.711	.679	.657	.636	.635	.637	.632	.612	.600	.591	.561
8th Yr	.538	.515	.494	.468	.468	.436	.422	.397	.380	.368	.345	.345
9th Yr	.345	.339	.332	.326	.302	.264	.262	.246	.244	.244	.244	.251
10th Yr	.244	.228	.218	.218	.218	.210	.184	.173	.171	.162	.153	.153
11th Yr	.153	.153	.153	.153	.153	.142	.142	.142	.133	.133	.133	.133
12th Yr	.142	.112	.112	.121	.121	.121	.102	.091	.081	.081	.070	.048
13th Yr	.048	.048	.036	.036	.024	.024	.024	.024	.024	.024	.024	.024
14th Yr	.024	.024	.024	.024	.012	.012	.012	.024	.024	.024	.036	.036
15th Yr	.048	.048	.048	.036	.036	.036	.036	.036	.036	.036	.036	.036
16th Yr	.036	.036	.036	.036	.036	.036	.036	.024	.024	.024	.024	.024
17th Yr	.024	.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

The average time served is 88.9 months for 552 inmates.

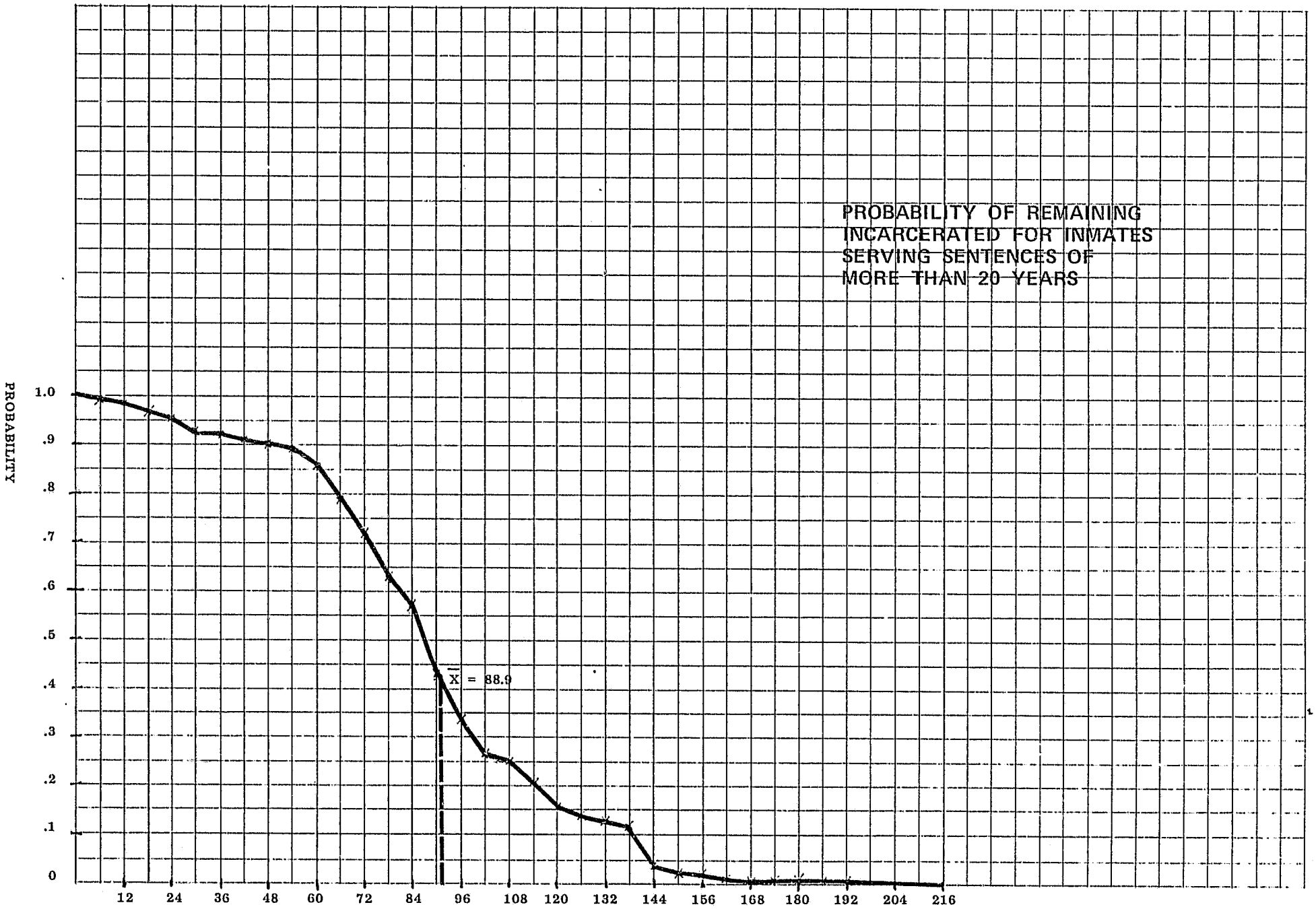

PROBABILITY OF REMAINING INCARCERATED FOR INMATES SERVING SENTENCES OF MORE THAN 20 YEARS
PROBABILITY
1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
$\bar{X}$ = 88.9
12
24
36
48
60
72
84
96
108
120
132
144
156
168
180
192
204
216
MONTHS

FIGURE C-13

TABLE C-14

INCARCERATION PROBABILITY FUNCTION
For Inmates Serving LIFE Sentences

	Month 1	2	3	4	5	6	7	8	9	10	11	12
1st Yr	1.000	1.000	1.000	.998	.998	.998	.998	.998	.998	.998	.998	.998
2nd Yr	.998	.998	.998	.998	.998	.998	.998	.998	.998	.998	.998	.998
3rd Yr	.998	.998	.998	.998	.998	.998	.998	.998	.998	.998	.995	.992
4th Yr	.992	.990	.990	.989	.989	.989	.989	.989	.990	.990	.990	.990
5th Yr	.990	.990	.990	.991	.991	.991	.991	.991	.986	.986	.986	.984
6th Yr	.982	.982	.982	.982	.982	.982	.981	.981	.973	.973	.972	.973
7th Yr	.961	.961	.959	.960	.959	.954	.950	.948	.945	.939	.934	.928
8th Yr	.926	.916	.910	.906	.903	.903	.890	.889	.882	.879	.866	.849
9th Yr	.836	.818	.801	.785	.786	.774	.779	.761	.749	.743	.743	.745
10th Yr	.745	.733	.714	.701	.693	.693	.678	.662	.655	.648	.626	.620
11th Yr	.591	.586	.568	.563	.548	.531	.525	.536	.536	.507	.507	.501
12th Yr	.507	.507	.501	.482	.455	.440	.416	.416	.407	.398	.389	.350
13th Yr	.370	.370	.389	.389	.398	.380	.380	.370	.340	.361	.361	.350
14th Yr	.350	.350	.361	.370	.370	.340	.340	.306	.289	.324	.313	.313
15th Yr	.301	.301	.301	.301	.284	.284	.272	.272	.259	.259	.259	.259
16th Yr	.233	.233	.219	.219	.189	.189	.189	.189	.189	.157	.157	.140
17th Yr	.140	.140	.104	.085	.085	.085	.085	.085	.085	.022	.022	.022

The average time served is 138.0 months for 625 inmates.

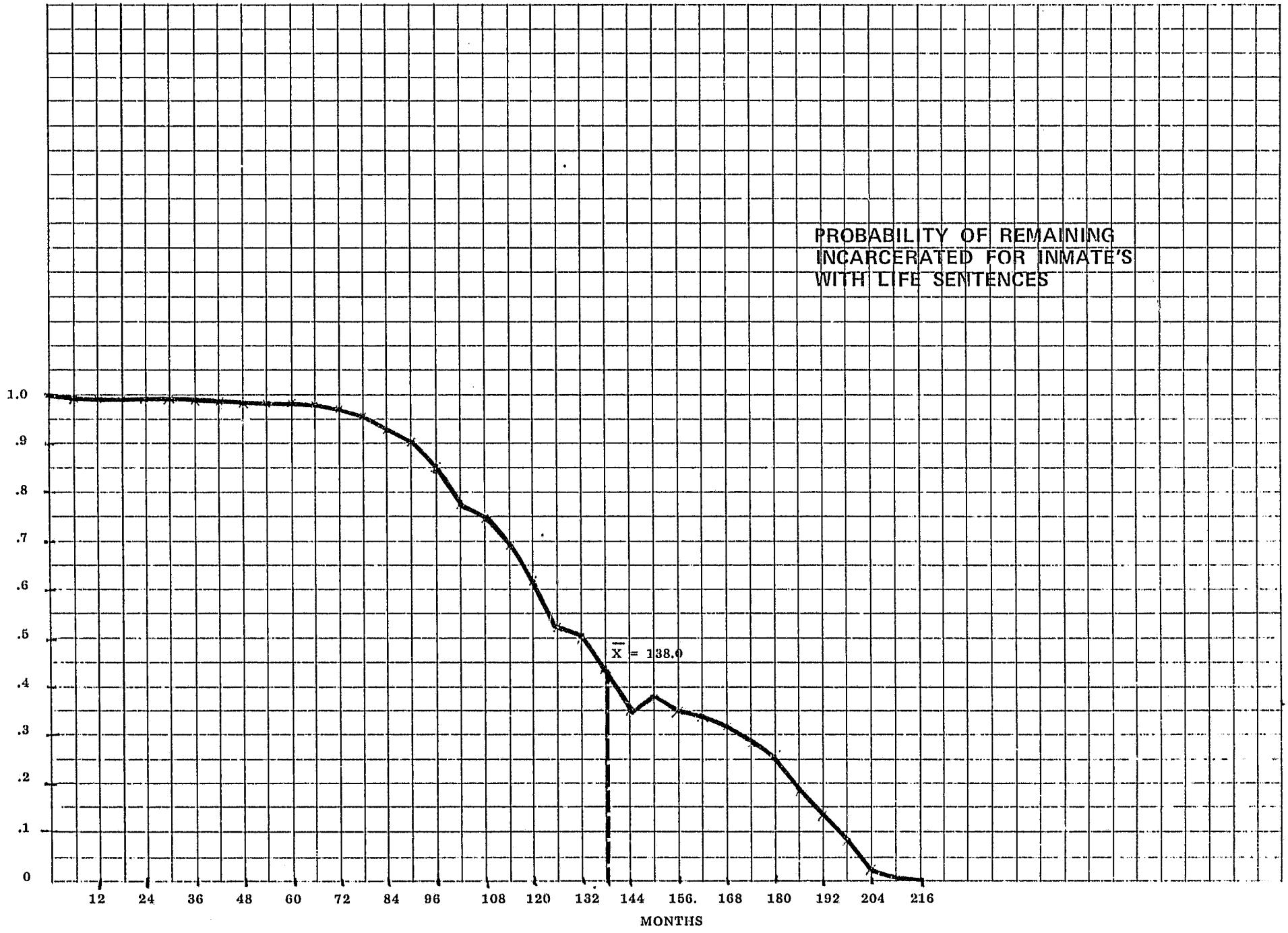

PROBABILITY OF REMAINING INCARCERATED FOR INMATE'S WITH LIFE SENTENCES
PROBABILITY
1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
$\bar{X}$ = 138.0
12
24
36
48
60
72
84
96
108
120
132
144
156.
168
180
192
204
216
MONTHS

FIGURE C-14

APPENDIX D

The following Appendix contains data tables that support graphs or narrative presented in the report.

TABLE D-1

POPULATION AT RISK (MALES, 18-29 IN FLORIDA)

YEAR	POPULATION	YEAR	POPULATION
1960	379,000	1981	874,000
1961	398,000	1982	891,000
1962	424,000	1983	905,000
1963	435,000	1984	917,000
1964	446,000	1985	927,000
1965	466,000	1986	936,000
1966	486,000	1987	944,000
1967	512,000	1988	953,000
1968	-36,000	1989	960,000
1969	554,000	1990	966,000
1970	585,000	1991	969,000
1971	615,000	1992	970,000
1972	645,000	1993	969,000
1973	675,000	1994	968,000
1974	705,000	1995	968,000
1975	735,000	1996	969,000
1976	751,000	1997	971,000
1977	768,000	1998	974,000
1978	799,000	1999	977,000
1079	826,000	2000	982,000
1980	854,000		

Source: 1960, 1970; Census of Population, Bureau of Census, U.S. Department of Commerce.
1975-1975, 1990, 1995, 2000; Bureau of Economic and Business Research, College of Business Administration, University of Florida.

Figures were interpolated for the other years.

TABLE D-2

FLORIDA UNEMPLOYMENT RATE (1960-1980)

YEAR	UNEMPLOYMENT RATE
1960	6.0
1961	7.5
1962	6.5
1963	6.0
1964	4.8
1965	4.1
1966	3.7
1967	3.8
1968	3.8
1969	3.5
1970	4.3
1971	4.9
1972	4.5
1973	4.3
1974	6.3
1975	10.6
1976	9.0
1977	8.2
1978	6.0
1079	5.9
1980	5.9

Source: 1960-1977; Labor Force Estimates by Research and Statistics, Labor Market Analysis, Department of Commerce. Unemployment rates reported before 1970 were increased 1% since there was a change in the method of computation in 1970.

1978-1980; Projections by the Economic and Tax Research Unit, Division of Budget, Department of Administration

TABLE D-3

INMATE ANNUAL ADMISSIONS, LOSSES AND TOTAL INMATE POPULATION (1960-1978)*

YEAR	ADMISSIONS	LOSSES	INMATE POPULATION		
			DC INSTITUTIONS	W CONTRACT JAIL BEDS	W JAIL BACKLOG
1960-61	3342	2975	7,536		
1961-62	3607	3143	8,000		
1962-63	2971	3374	7,597		
1963-64	3376	4227	6,746		
1964-65	3550	3326	6,970		
1965-66	3337	3229	7,078		
1966-67	3290	3046	7,322		
1967-68	3379	2969	7,732		
1968-69	3736	3046	8,442		
1969-70	3829	3458	8,793		
1970-71	4617	3870	9,540		9,630
1971-72	5788	5216	10,112		10,322
1972-73	4958	4724	10,346		10,669
1973-74	5694	4705	11,335		11,744
1974-75	7222	4677	13,880	14,130	14,637
1975-76	8486	5559	16,807	17,172	17,531
1976-77	8224	6068	18,963	19,269	19,534
1977-78	8001	7170	19,794	19,881	20,142

*Admissions include new admissions from court and parole and mandatory conditional release violators. Losses include releases and net losses from temporary absences.

TABLE D-4

MONTHLY ADMISSIONS, LOSSES, POPULATION WITH CONTRACT JAIL BEDS

DATE	ADMISSIONS	LOSSES	POPULATION
7/78	671	618	19,934
8	685	619	20,000
9	689	617	20,072
10	619	454	20,237
11	633	380	20,490
12	609	616	20,483
1/79	616	610	20,489
2	633	613	20,509
3	716	613	20,612
4	602	615	20,599
5	638	618	20,619
6	688	622	20,685
7/79	696	625	20,756
8	710	624	20,842
9	715	624	20,933
10	643	625	20,951
11	657	626	20,982
12	632	623	20,991
1/80	640	630	21,001
2	657	629	21,029
3	743	631	21,141
4	624	633	21,132
5	662	633	21,161
6	713	638	21,236
7/80	725	639	21,322
8	740	639	21,423
9	745	638	21,530
10	669	640	21,559
11	684	639	21,604
12	659	640	21,623
1/81	666	644	21,645
2	684	643	21,686
3	774	647	21,813
4	651	648	21,816
5	690	651	21,855
6	743	655	21,943
7/81	778	657	22,064
8	793	656	22,201
9	799	656	22,344
10	718	658	22,404
11	734	659	22,479
12	706	659	22,526
1/82	714	665	22,575
2	734	666	22,643
3	830	671	22,802
4	697	672	22,827
5	739	675	22,891
6	797	681	23,007
7/82	795	682	23,120
8	812	684	23,248
9	817	685	23,380
10	734	688	23,426
11	750	690	23,486
12	722	690	23,518
1/83	731	696	23,553
2	750	697	23,606
3	849	700	23,755
4	713	702	23,766
5	756	705	23,811
6	815	712	23,920

END