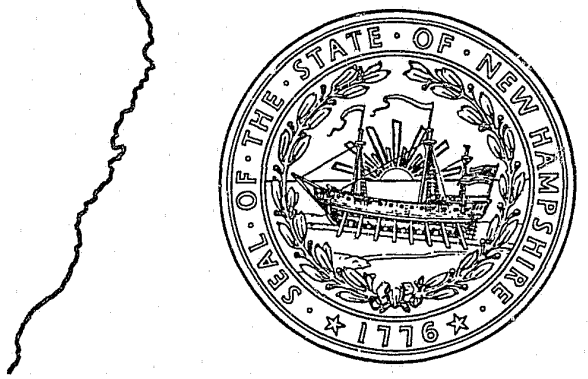
The New Hampshire Criminal Justice Community

Status and Trends



Governor's Commission on Crime and Delinquency

Statistical Analysis Center

MAY, 1977

THE NEW HAMPSHIRE CRIMINAL JUSTICE COMMUNITY - STATUS AND TRENDS

GOVERNOR'S COMMISSION ON CRIME AND DELINQUENCY

STATISTICAL ANALYSIS CENTER

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MAY, 1977

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I. INTRODUCTION

- What are the long-range crime trends in New Hampshire?

- How does the New Hampshire Criminal Justice System process offenders?

- How many offenders are there now and how many can we expect in future years?

- How long does it take to process an offender?

These are some of the questions that are addressed in this report.

New Hampshire does not have a formally organized criminal justice system. Because each of the criminal justice components (i.e. courts, prosecution, police, corrections, parole and probation) are independently organized, little has been done to examine and understand how the actions of one of the components affects the others. While legislation, time and money regulate and constrain the system of detention, apprehension, prosecution, adjudication and corrections, the glue that holds the system together is the offender. The numbers that characterize the flow of offenders through the criminal justice community exhibit the characteristics of a system. This report addresses some of those numbers.

This report evaluates available data which was obtained from each of the major elements of the criminal justice community and examines the way in which offenders flow through the system, from criminal offense through incarceration and subsequent parole or release.

Section II presents a static picture of the New Hampshire criminal justice system. Data for the year 1975 is presented in order to focus on major problems. Subsequent sections treat data obtained from police, the court system, and on populations of inmates and parolees. Data on time delays through the system is presented in Section VI. The three appendices deal with mathematical techniques which have been applied in the derivation of formulas used in this report.

II. A STATIC PICTURE OF THE NEW HAMPSHIRE CRIMINAL JUSTICE SYSTEM

This section contains data and analysis for calendar year 1975. The number of offenses committed, the number of crimes reported, the number of court dispositions, arrests, prosecutions, and inmates in our prisons are analyzed.

A picture of how offenders flow through the New Hampshire criminal justice system is shown in Figure II.1. There are many paths through the criminal justice system, but only one which leads to detention. In this paper, any path which does not lead to detention is considered diversion - diversion in the sense that if a person is not detained for the commission of a crime, he is, in fact, on the street and in a position to commit other offenses. The total number of crimes in this State was estimated to be 92,300 in 1975. New Hampshire police reports and the results of victimization studies (1) conducted at the National level both show that approximately 40% (36,920) of the total number of crimes committed in this State are actually reported to the police (2). Of those Part I crimes reported, more than 75% are not cleared by any means.

Reference is made to Appendix C where the total number of arrests resulting from the number of crimes reported is estimated to be 8,396. Of this total, 96% were prosecuted, and 71% were sentenced. Sixty percent of those sentenced were given dispositions other than incarceration (the categories 'suspended sentence', 'fine', and 'probation' account for a large fraction of these dispositions). Only 5.7% of the total reported crimes result in a verdict of not guilty, or dismissed for lack of evidence.

In 1975, 2,392 people went through the State correctional institutions. These people were detained in the State Prison, the Youth Development Center, the ten County Houses of Correction, or the Forensic Unit at the State Hospital. This figure represents nearly 6.5% of the crimes known to the police, and 28.5% of those actually arrested in 1975.

Figure II.2 represents the flow of offenders from arrest through detention. Here the total number (8,396) is separated into both adult and juvenile arrests. The numbers used were developed from the number of offenses cleared by the arrest of adults and juveniles, and from pertinent figures provided by other states concerning the ratio of the numbers cleared to the number of arrests (3).*

Data obtained from the Houses of Correction, the State Prison, the Youth Development Center and the Forensic Unit were used to compile Figure II.2. Note that 48% of the adults arrested were actually detained, whereas only 12% of the youths arrested were detained.

*See also Appendix C.

FIGURE II.1

OFFENDER FLOW
NEW HAMPSHIRE CRIMINAL JUSTICE SYSTEM

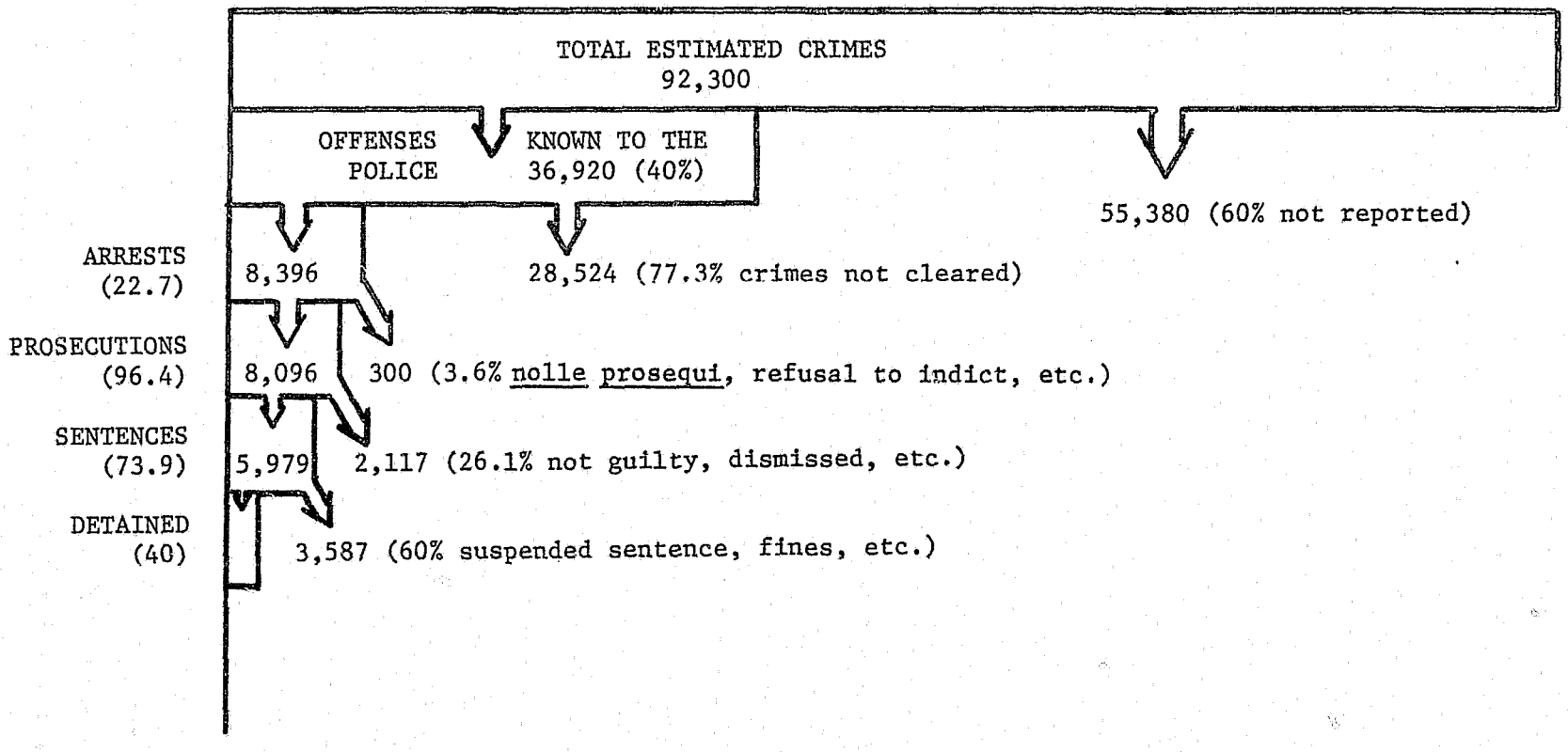
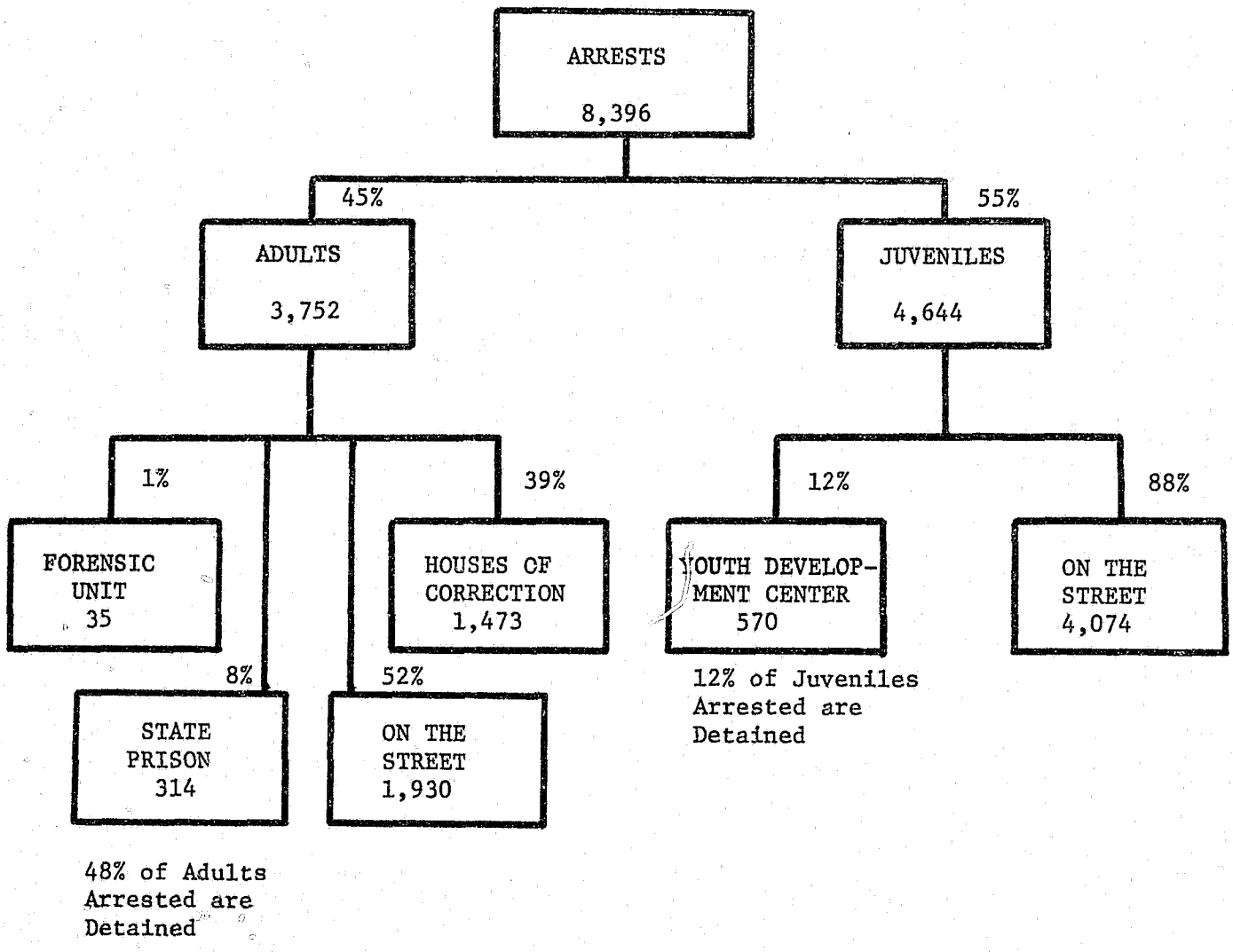


FIGURE II.2

FLOW FROM ARREST TO INCARCERATION*



*See Appendix C.

TABLE II.1

THE PROBABILITY OF PROCEEDING THROUGH THE NEW HAMPSHIRE CRIMINAL JUSTICE SYSTEM

If (1), then the probability of (2) occurring is shown above the diagonal.

If (2), then the probability of (1) not occurring is shown below the diagonal.

(1) \ (2)	OFFENSE	OFFENSE KNOWN TO POLICE	ARREST	PROSECUTION	SENTENCE	INCARCERATION
OFFENSE	1.0 0.0	.4	.09	.09	.07	.02
OFFENSE KNOWN TO POLICE	.6	1.0 0.0	.23	.22	.16	.05
ARREST	.91	.77	1.0 0.0	.96	.71	.22
PROSECUTION	.91	.78	.04	1.0 0.0	.74	.22
SENTENCE	.93	.84	.20	.26	1.0 0.0	.30
INCARCERATION	.98	.95	.78	.78	.70	1.0 0.0

TABLE II.2

NEW HAMPSHIRE CLEARANCE RATES FOR 1975

(The percentage of offenses known to Police which were cleared by arrest or by other means.)

TOTAL # OF INDEX OFFENSES = 36,920 CRIME RATE + 4,343/100,000 POPULATION

OFFENSE	CLEARANCE RATE (%)
All Part I Offenses	29
a. Person Crimes	70
Murder	73
Manslaughter	59
Rape	52
Robbery	62
Aggravated Assault	80
b. Property Crimes	24
Burglary	26
Larceny	22
Motor Vehicle Theft	27

The probabilities of a criminal proceeding from one stage to another in the State criminal justice system has been calculated, and is presented as Table II.1.

The 22% clearance rate for larceny in 1975 is the lowest of all the clearance rates. As a summary, Table II.2 shows the clearance rates for all Part I offenses.

The capacity of the State Prison and the Youth Development Center is one of the factors which must be taken into consideration when assessing what to do with an offender. In a subsequent section of this report, it is shown that the population of the State Prison and the Youth Development Center has remained relatively stable for the past 10 years. The County Houses of Correction are used at about 70% capacity. If we examine the prison population more closely, we note that 54% are there for the first time; 23% were there once before; 11% have been there twice; 12% have been there 3 or more times. Twenty-four percent of all inmates released on parole come back to the prison. The percentage of prisoners at the State Prison who were incarcerated for violent crimes has increased from 25% to 42% in the past ten years.

Because of limited cell space, an increase in the number of people sentenced to prison effectively decreases the length of time a prisoner will be incarcerated. In effect, prisoners are given an early parole in order to free space for incoming prisoners. As a result, in 1975, the average minimum sentence given to inmates at the State Prison was 2.5 years, while the average time served was only 9 months.

Recidivists (i.e. the number of people in prison now who were there before) account for nearly 30% of our prison population; however, this is not the whole story. Sixty-six percent of the prison population have had previous convictions. Fifty-five percent of the prison population was formally at the Youth Development Center.

The static picture just presented gives a capsule view of where New Hampshire's criminal justice system was in 1975. In order to examine what the system is likely to do in the future, the succeeding sections of this report analyzed the variations in the system which have occurred in the past, and project these results into the future.

III. OFFENSE DATA

From Figure III.1, it can be seen that New Hampshire's crime rate will equal the national crime rate some time in 1985 or 1986 unless something is done. This projection for New Hampshire is conservative, a fact which is confirmed by the actual data for the past five years. It is probable that a new trend has been established during this time period for New Hampshire, and that a less conservative projection would cause the New Hampshire crime rate to exceed the national rate at an earlier date.

The dip in the national data is probably accounted for by an FBI re-definition of larceny-theft which occurred in 1972. The rapid increase in New Hampshire's crime rate for the past four years is largely accounted for by this change. The trend, however, remains large and is only slightly influenced by this change.

A number of different mathematical curves were used to try to fit the crime rate data (5) from 1959 through 1975. It was found that most of the data could be fit very well by an exponential curve of the form

$$\text{Rate} = Ae^{Bt}$$

where A and B are constants, e is the base of the natural logarithms and t is the time in years (Appendix A should be consulted for a more complete discussion).

In Figure III.1, the data from the FBI reports is shown in solid black lines and the exponential curve derived from this data is shown by dots. Both the United States crime rate and the New Hampshire crime rate are displayed on the same chart as a function of the year. The mathematical formula which best fits this data is used to extrapolate the trend shown from 1959 through 1975 into the future.

The crime rate data has been further broken down into rates per 100,000 population for violent crimes and property crimes. Violent crime data is shown in Figure III.2. Once again, the data is very well represented by an exponential curve. New Hampshire will not see as rapid an increase in violent crimes during the next few years as will the rest of the nation if this projection holds true.

Most of the rapid increase in New Hampshire's crime rate is explained by increases in property crime. Figure III.3 shows the curves for this data. Note once again the rapid increase in property crime during the past four years.

Individual Part I offense data is shown in Figures III.4 through III.10. The murder rate by year is shown in Figure III.4, both for the United States and New Hampshire. If United States' data for the past 15 years is examined, an exponential curve is once again a good approximation. An examination of New Hampshire's data reveals that the variability

FIGURE III.1

CRIME RATE VS. TIME

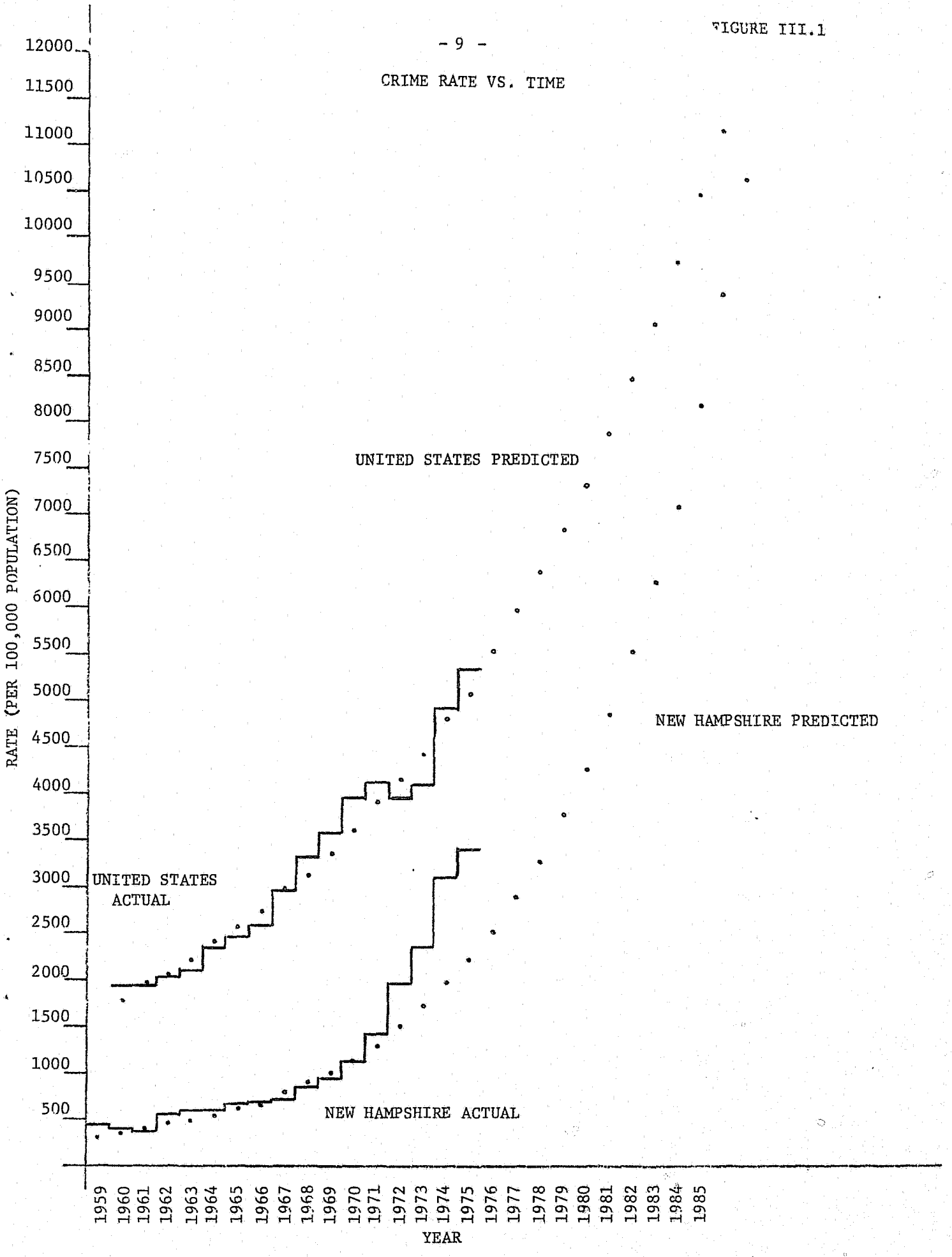
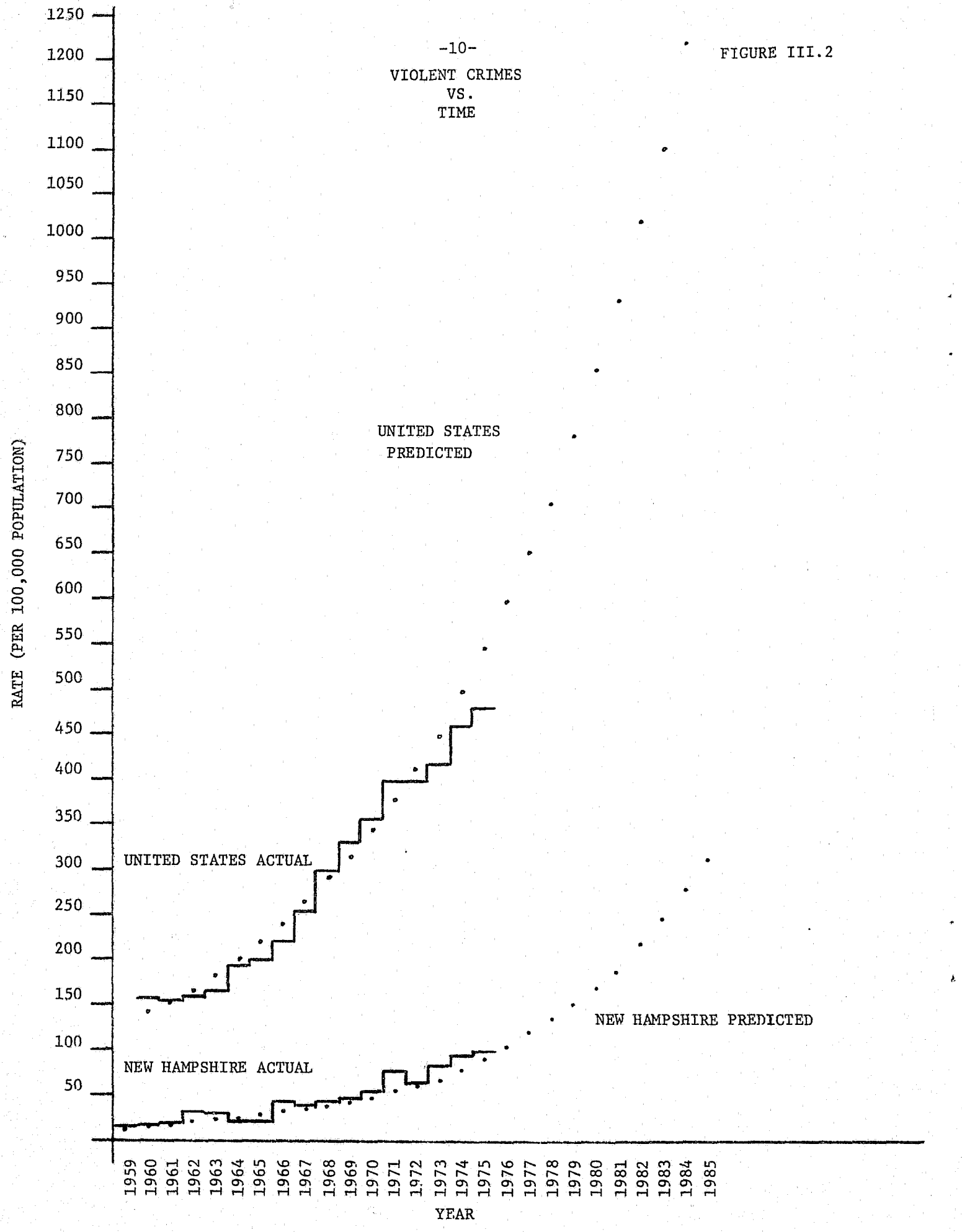
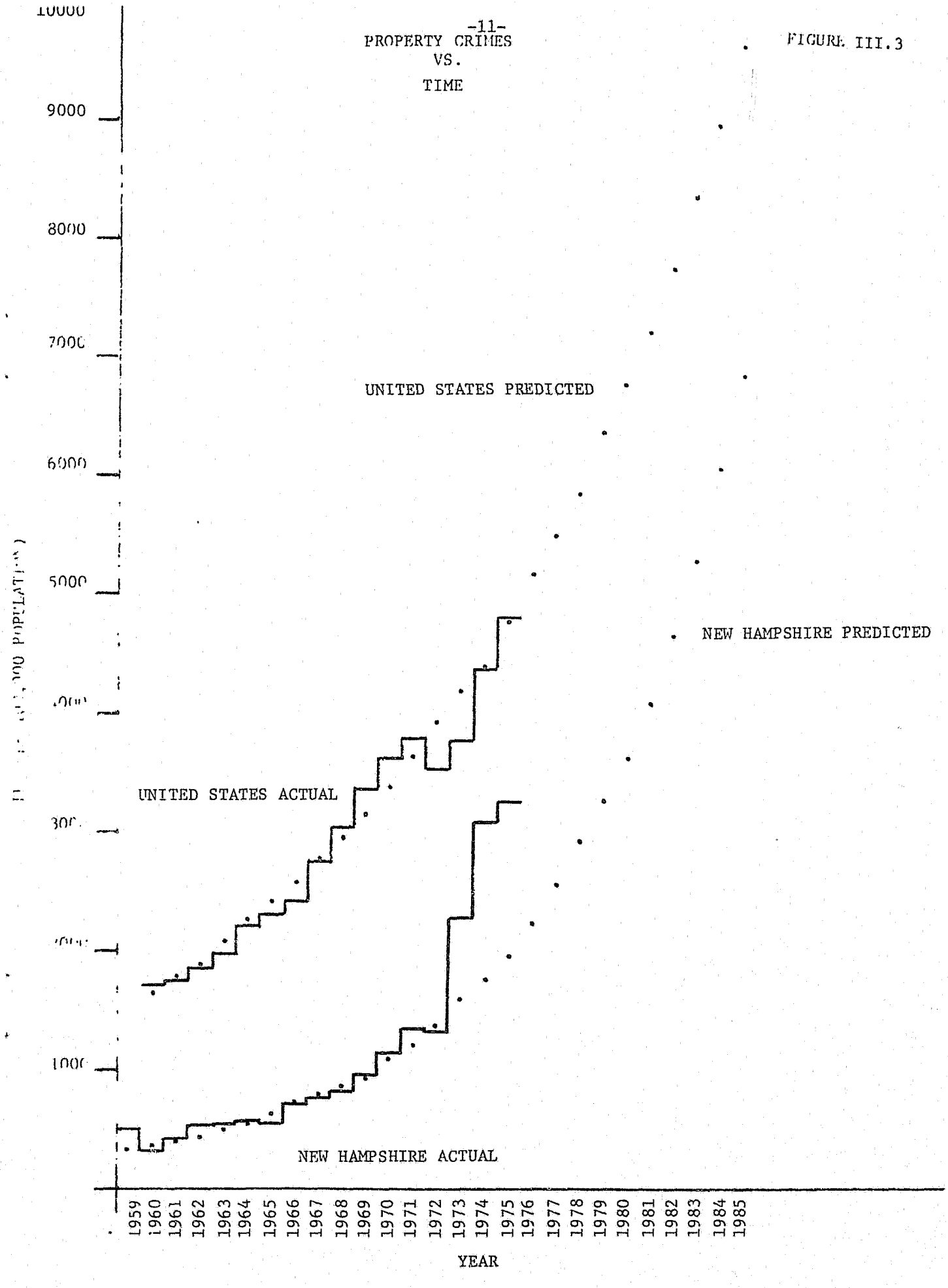


FIGURE III.2


VIOLENT CRIMES
VS.
TIME
UNITED STATES
PREDICTED
UNITED STATES ACTUAL
NEW HAMPSHIRE PREDICTED
NEW HAMPSHIRE ACTUAL
RATE (PER 100,000 POPULATION)
1250
1200
1150
1100
1050
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
1959
1960
1961
1962
1963
1964
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
YEAR

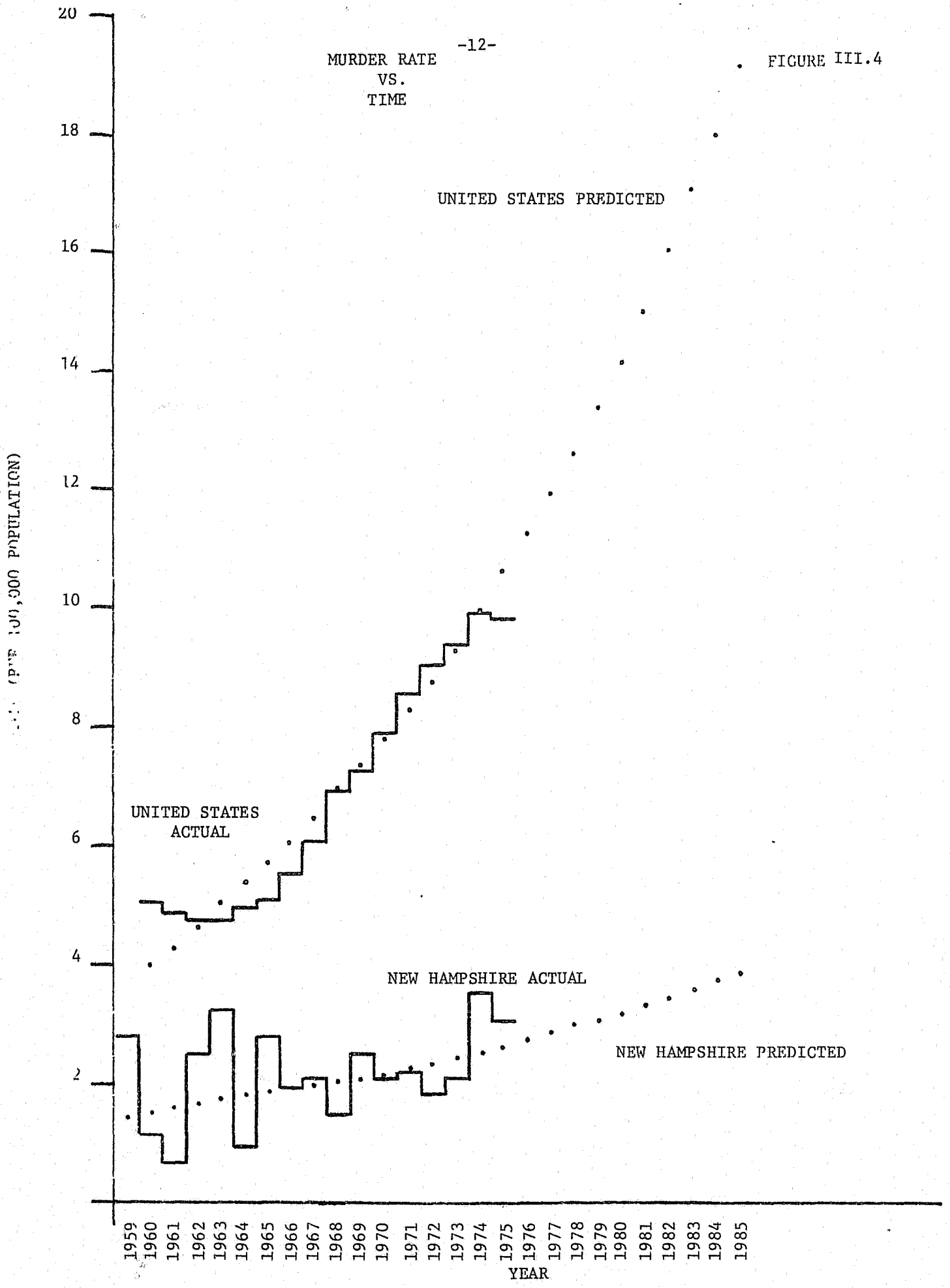
PROPERTY CRIMES
VS.
TIME

FIGURE III.3



MURDER RATE
VS.
TIME

FIGURE III.4



in the data is quite large. The small number of reported murders is responsible for this large variability. The total number of reported murders and non-negligent manslaughters for calendar year 1975 was 24. It is, therefore, difficult to come to any conclusion about trends in data with respect to murder.

In Figure III.5, rape information is presented for the United States and New Hampshire. Once again, New Hampshire's data exhibits a large degree of variability. The explanation is the same as in the previous paragraph, that is, there are a very small number of rapes reported in New Hampshire; in 1975 the number was 71. Once again, however, note that the numbers for rapes in the United States is increasing rapidly.

The trend in the rate for aggravated assault* is shown in Figure III.6. Both New Hampshire and the United States exhibit a strong exponential trend. Aggravated assault is the one crime against persons where the New Hampshire rate is increasing more rapidly then the national rate. The total of 485 reported aggravated assaults in calendar year 1975 is also large enough to allow statistical predictions to be made.

There were 236 robberies reported in New Hampshire in 1975. The long-range trend data for robbery is shown in Figure III.7. National data strongly exhibits an exponential rise in rate and the New Hampshire data follows suit. The total number of robberies, while less than the number of aggravated assaults, is still sufficiently large to allow statistical predictions to be made.

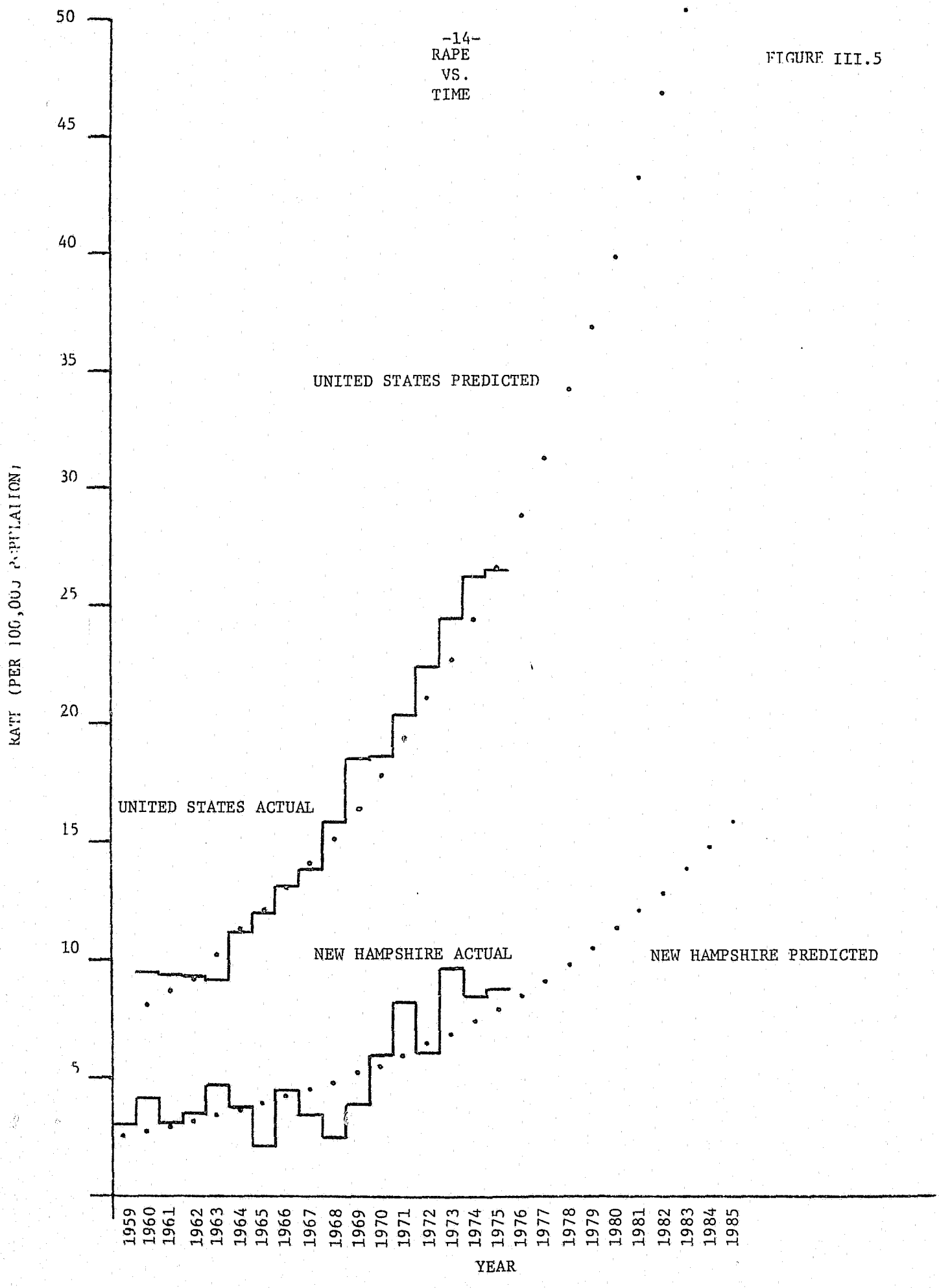
The remaining portion of this section describes trends for the three property crimes of burglary, larceny and motor vehicle theft. These three offenses accounted for 97% of the total number of offenses in 1975. Clearly, property crimes account for most of the rapid increase in crime rate in New Hampshire.

Burglary by year is shown in Figure III.8. The curves for the United States and New Hampshire are almost parallel and both increase at an exponential rate.

*Aggravated Assault - Assault with intent to kill or for the purpose of inflicting severe bodily injury by shooting, cutting, stabbing, maiming, poisoning, scalding, or by the use of acids, explosives or other means. Excludes simple assaults.

RAPE
VS.
TIME

FIGURE III.5



AGGRAVATED ASSAULT
VS.
TIME

FIGURE III.6

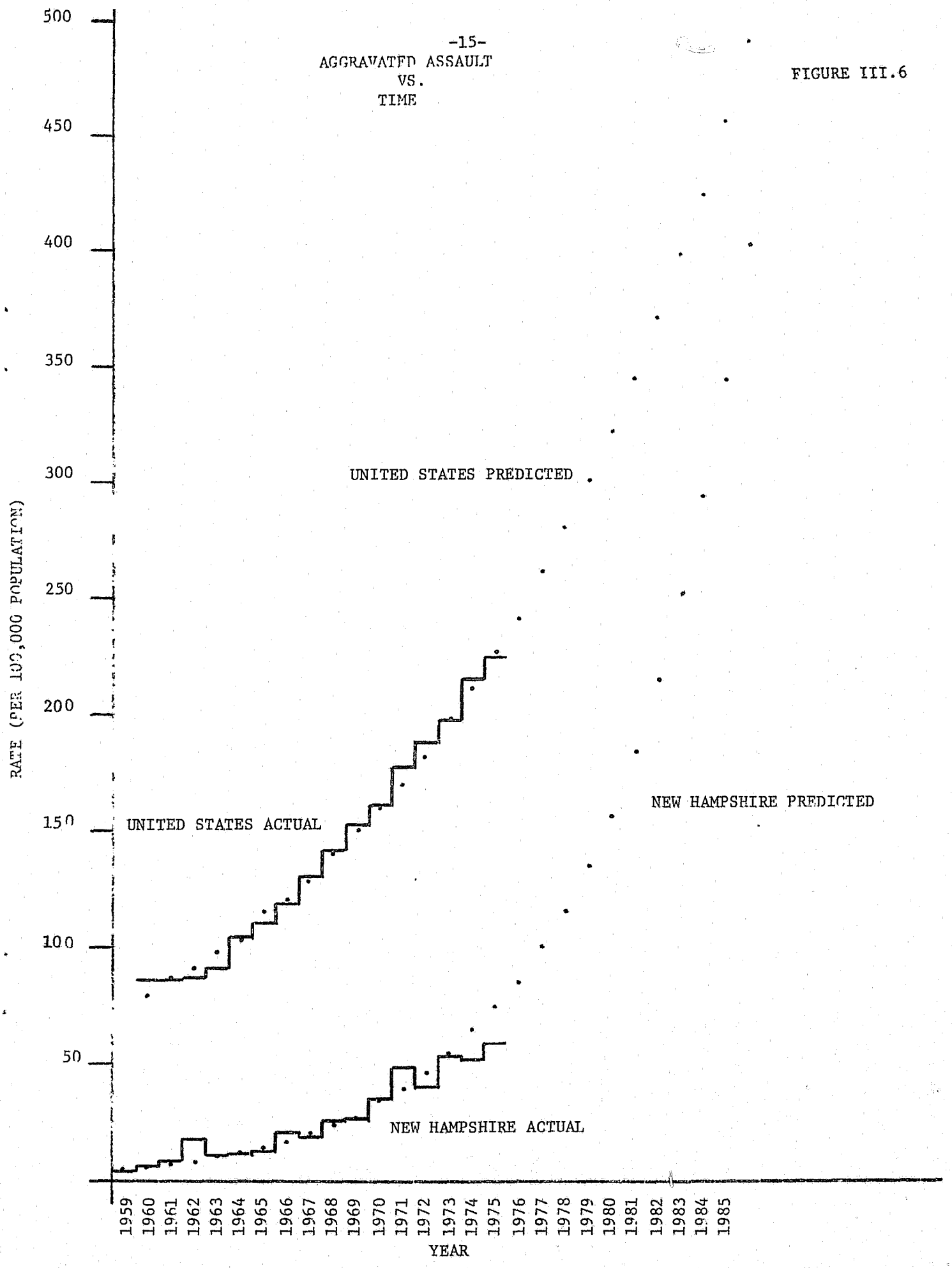


FIGURE III.7

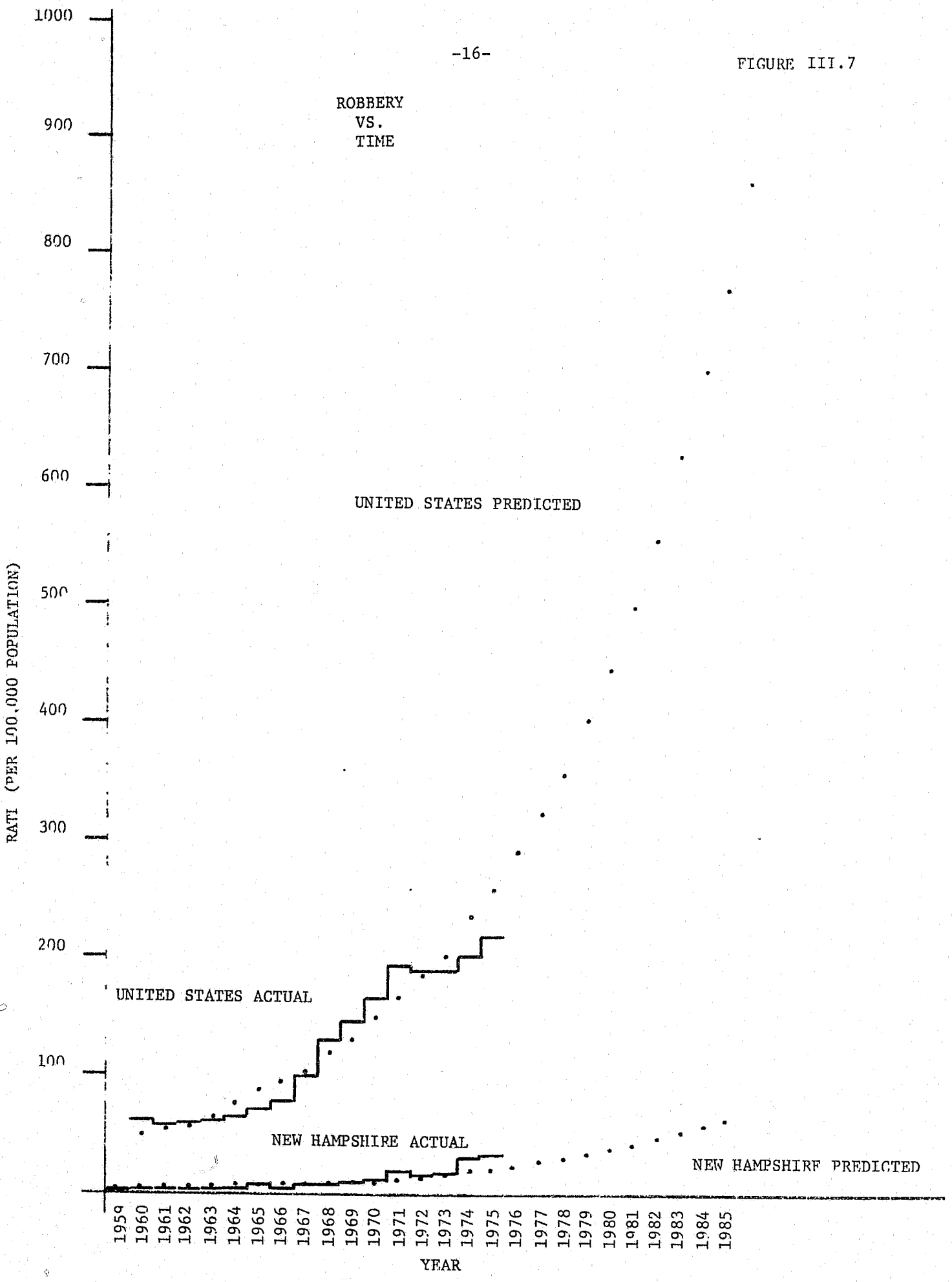
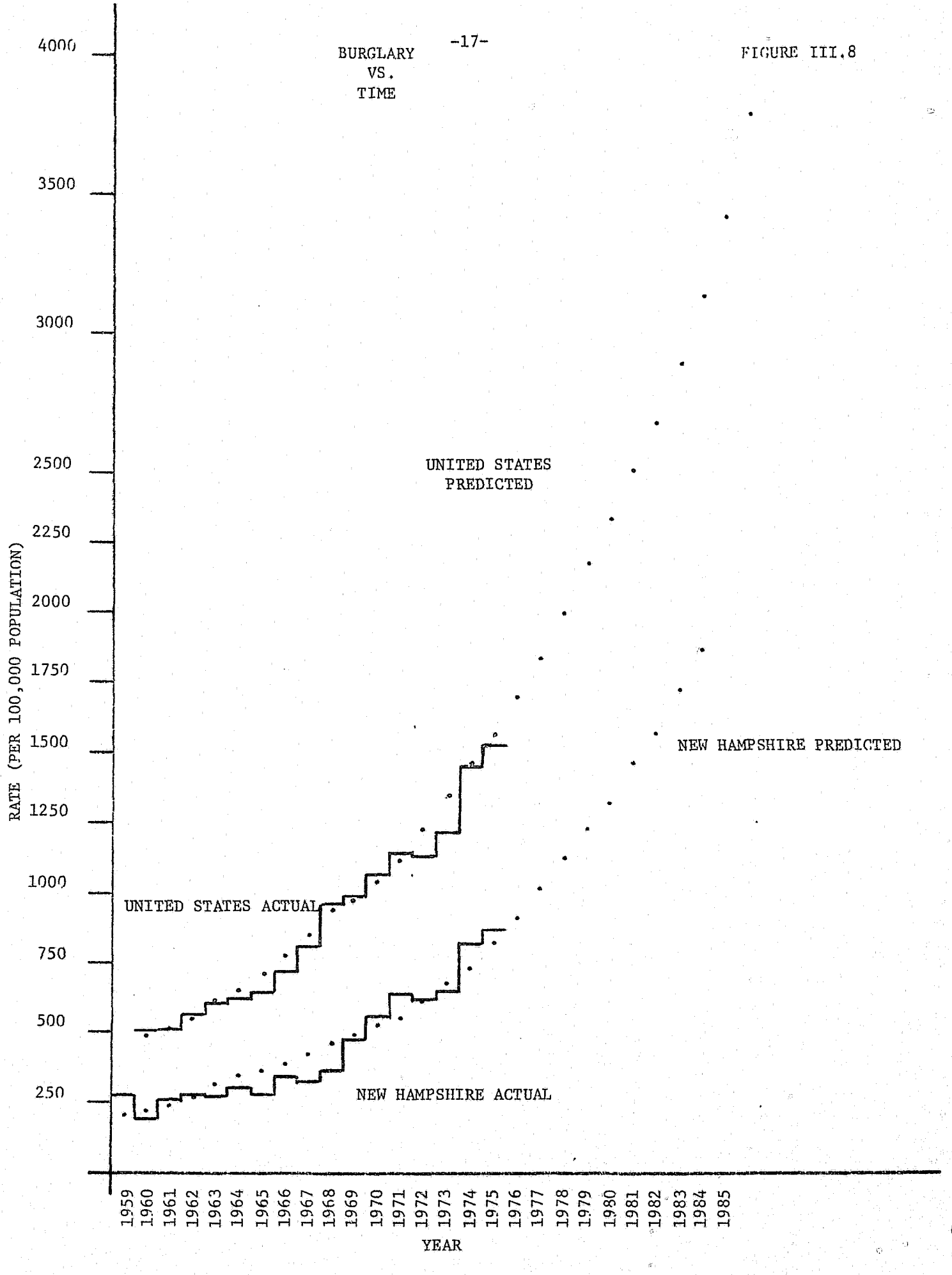

ROBBERY
VS.
TIME
UNITED STATES PREDICTED
UNITED STATES ACTUAL
NEW HAMPSHIRE ACTUAL
NEW HAMPSHIRF PREDICTED
RATI (PER 100,000 POPULATION)
1000
900
800
700
600
500
400
300
200
100
1959
1960
1961
1962
1963
1964
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
YEAR

FIGURE III.8


BURGLARY
VS.
TIME
4000
3500
3000
2500
2250
2000
1750
1500
1250
1000
750
500
250
RATE (PER 100,000 POPULATION)
UNITED STATES
PREDICTED
NEW HAMPSHIRE PREDICTED
UNITED STATES ACTUAL
NEW HAMPSHIRE ACTUAL
1959
1960
1961
1962
1963
1964
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
YEAR

In Figure III.9, data on larceny are displayed. Larceny accounts by far for the largest number of offenses known to police (17,470 in 1975). If the present rate of increase of larceny continues, the New Hampshire rate will equal the national rate sometime in 1980. It is clear that a given change in the larceny rate will have a much larger effect on the crime rate than the same change for any other offense.

The remaining Part I offense, motor vehicle theft, accounted for only 2,111 of the offenses reported in 1975 in New Hampshire. The data over the 15 year period shown in Figure III.10, clearly indicates once again, an exponential trend both for the United States and for New Hampshire.

The offense data which is described above clearly demonstrates that New Hampshire has a crime rate which is increasing more rapidly than the crime rate in the nation. The exponential character of the data indicates that there is a mechanism which is operative in New Hampshire and in the nation which results in the crime rate rising much more rapidly than the population (see Table A11 for supporting data).

FIGURE III.9

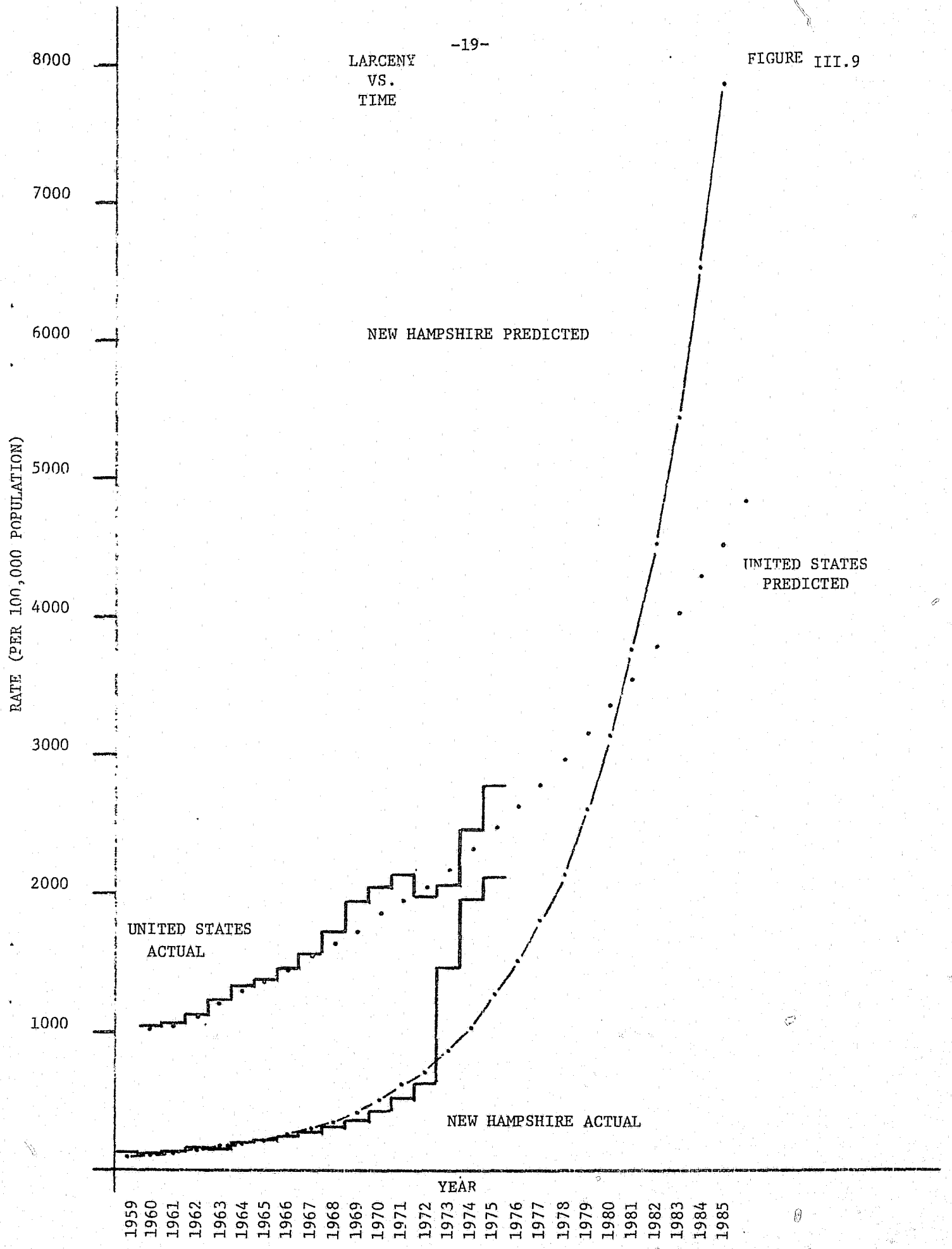
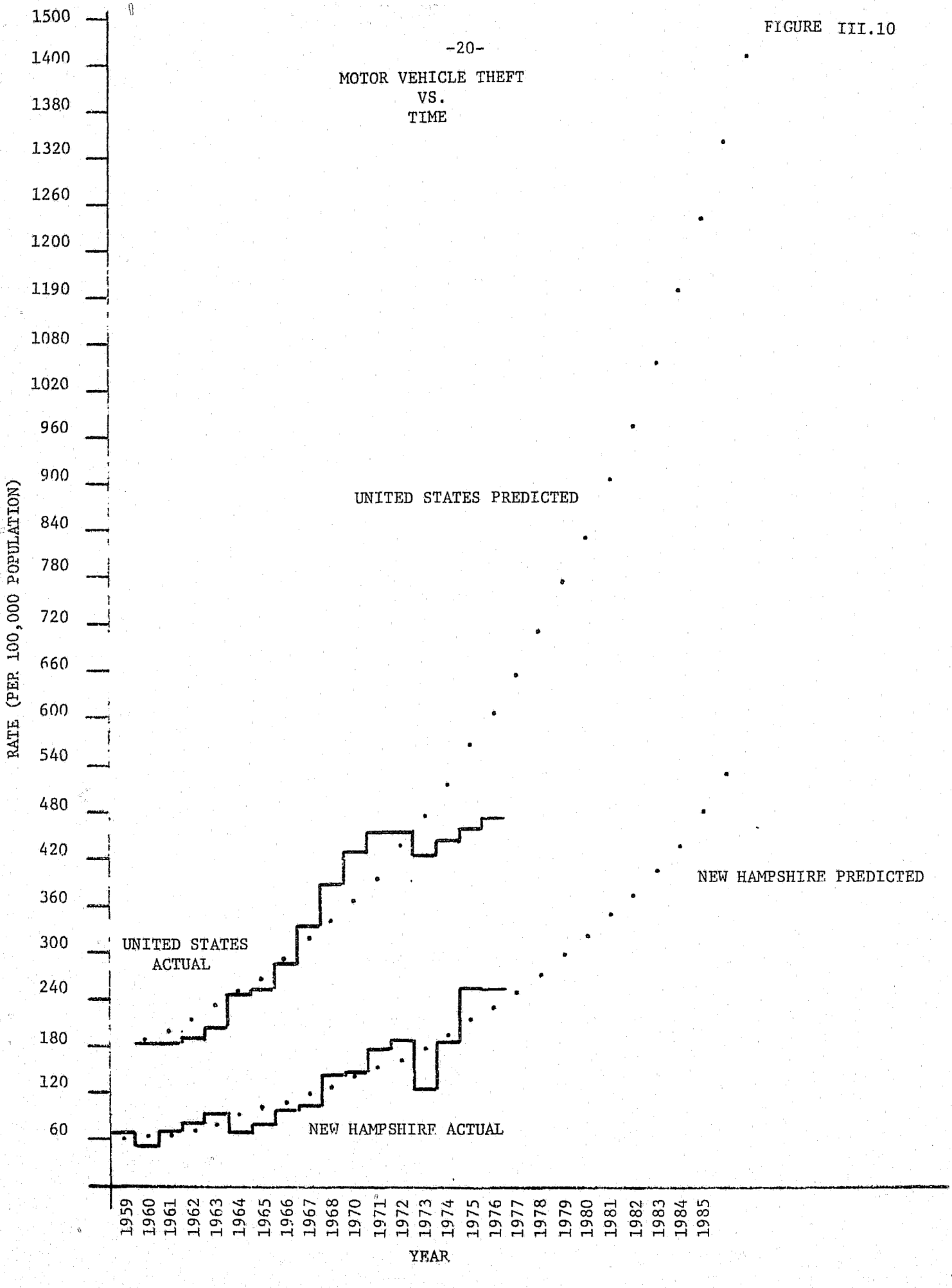

LARCENY
VS.
TIME
8000
7000
6000
5000
4000
3000
2000
1000
RATE (PER 100,000 POPULATION)
NEW HAMPSHIRE PREDICTED
UNITED STATES
PREDICTED
UNITED STATES
ACTUAL
NEW HAMPSHIRE ACTUAL
YEAR
1959
1960
1961
1962
1963
1964
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985

FIGURE III.10

MOTOR VEHICLE THEFT
VS.
TIME



IV. TRENDS IN COURT DATA

Generally, the courts of New Hampshire are saturated with cases. Both the Supreme and Superior Courts are having difficult times disposing of the large number of cases entered each year. The number of criminal cases left pending at the end of the year exhibit a long-range trend which rises even more rapidly than the rate of increase of offenses known to the police.

The available information from the courts which is useful for statistical purposes consists mostly of data on caseloads (6). It is important to note that 'caseload' is not equivalent to 'offender'. A single person may be accused of several offenses. In other words, each offense, not each offender, is counted as one case.

Data for the twelve year period from 1964 to 1976, is analyzed in this section. Data from the Supreme and Superior Courts are compiled by periods which begin on August 1 and end July 31 the following year, while the municipal and district court data cover the period from January 1 to December 31 of each year.

Figure IV.1, shows data from the Supreme Court (7). Actual caseloads are shown by bars. The curves which fit this data are also exponential in form, and show the data projected through 1984. Note that the number of cases pending at the end of the year crossed the curve showing the number of cases disposed of during the year 1974. This means that the New Hampshire Supreme Court will be unable to handle a significantly larger number of cases than it now handles without major changes in its operation. The time it takes for the number of cases to double (T) is also shown.

Superior Court data is presented in Figure IV.2. The exponential nature of this trend is once again clear (8). The projected number of cases pending will equal the projected number of cases disposed of by the Superior Court early in 1978 if past trends persist; this might be considered a measure of the 'saturation' of the court system. Certainly as long as the number of offenses known to the police doubles every 5.3 years, we can reasonably expect that the number of criminal cases entered in the Superior Court will also rise sharply. These results strongly suggest that new ways must be found to allow the Superior Courts to handle a great many more cases during the course of a year. Once the Superior Court system reaches saturation, the load on the Supreme Court should level off.

The only caseload data available from the Municipal and District Courts is the number of cases entered during the calendar year (9). From Figure IV.3 it can be seen that this data also follows the familiar exponential curve. Most juvenile cases are handled by these courts.

FIGURE IV.1

NEW HAMPSHIRE SUPREME COURT
12 YEAR TREND PROJECTION

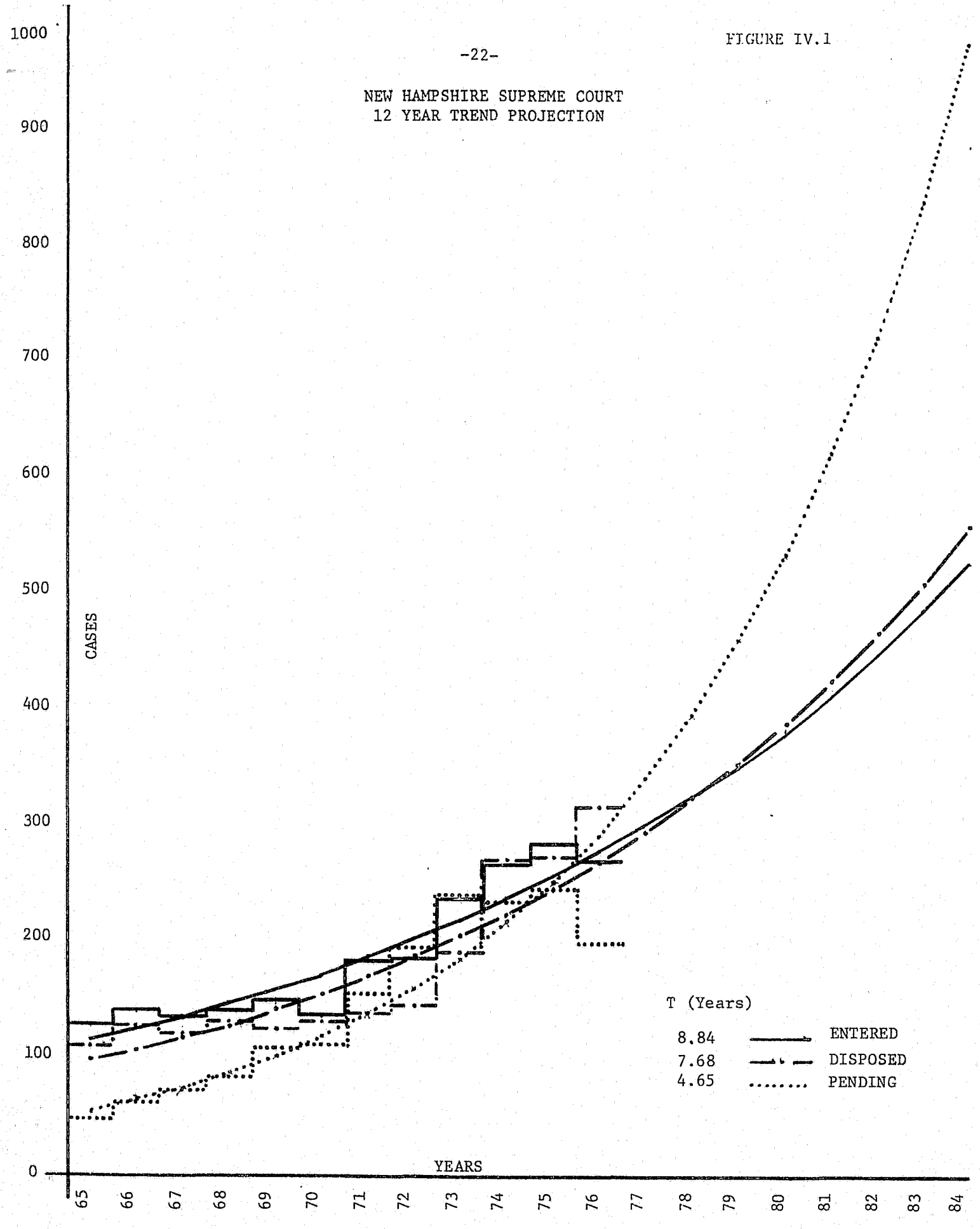


FIGURE IV.2

N.H. SUPERIOR COURT CRIMINAL CASES
PROJECTIONS

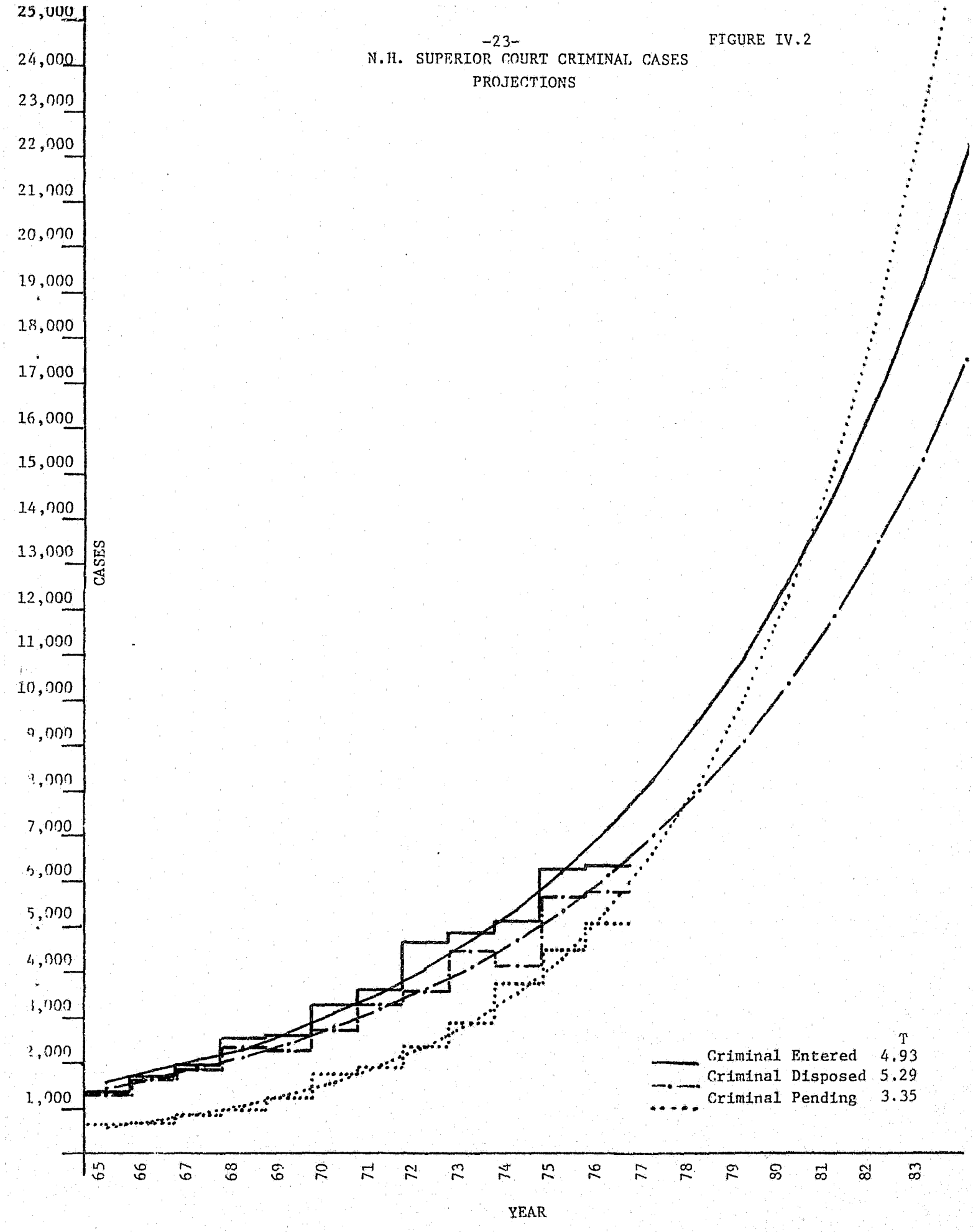
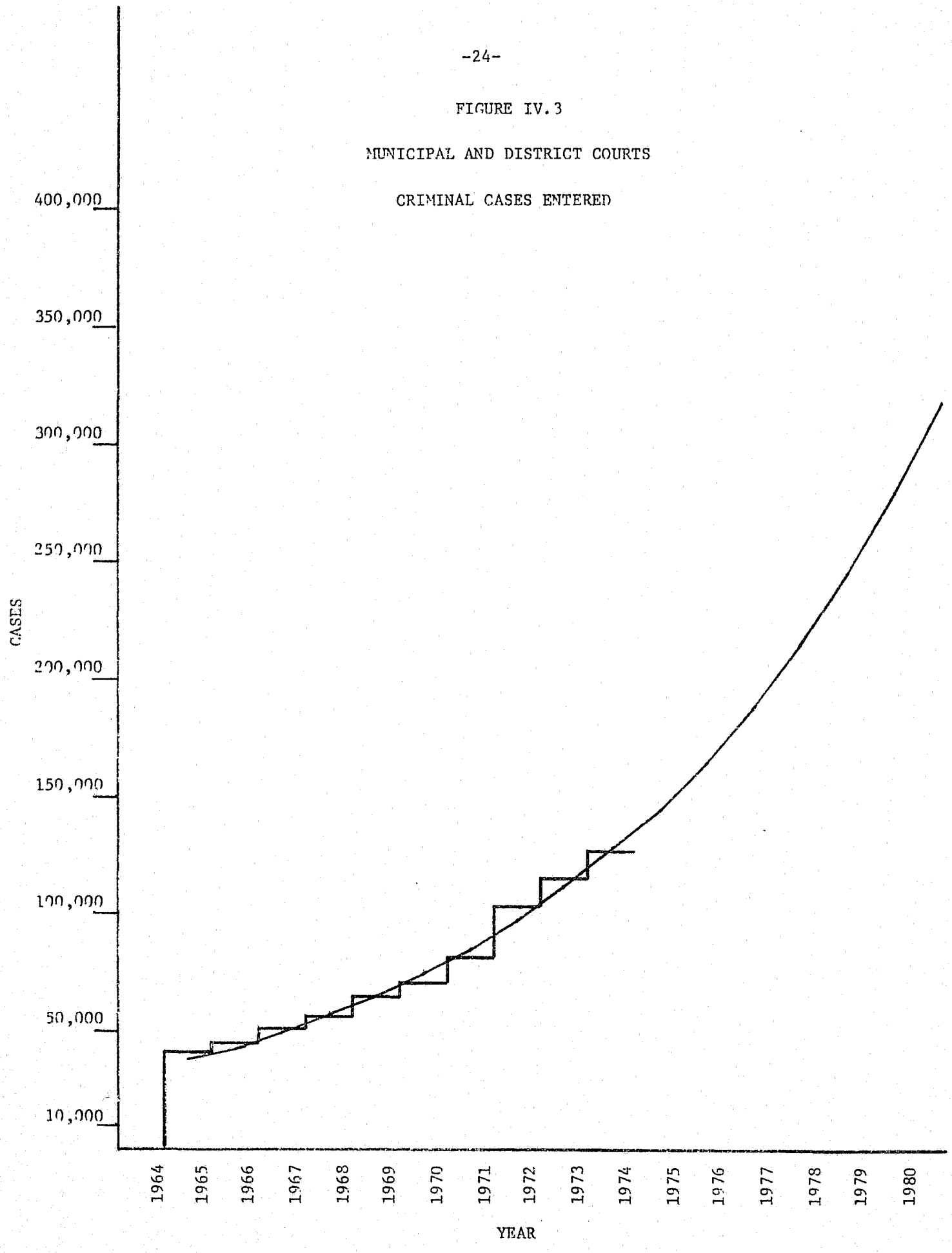


FIGURE IV.3

MUNICIPAL AND DISTRICT COURTS

CRIMINAL CASES ENTERED



V. CORRECTIONS

The correctional system in New Hampshire does not exhibit the same trends that were found with either the police or court data. In fact, the prison population has remained almost constant during the past ten years. The fixed number of available cells is the reason the prison population cannot increase without additional facilities. The parole population, on the other hand, exhibits the same exponential increase as the other elements of the criminal justice system already discussed. The average daily population of inmates at the State Prison has been 232 ± 18* over the past 8 years. Therefore, the parole population has to increase in order to accommodate the ever-increasing numbers sentenced and the fixed number of cells (see Figure V.1).

Since 1968, the annual number of violent offenses known to the police has increased from 270 to 709. A mathematical analysis of this data shows that the number of violent offenses known to the police can reasonably be represented by a straight line:

$$\text{Violent Offenses} = 217.82 + 67.84 \times (\text{Year} - 1967)$$

Using this equation, we can see that there will probably be 1,000 violent offenses committed in 1979 unless some change occurs. In fact, with 95% confidence, the number of violent offenses which the police will report in 1979 will lie between 679 and 1,395.

What does this have to do with the prison population? As shown in Table V.1, this saturation of the prison population results in an ever-decreasing percentage of the violent offenders known to police ending up in prison.

It takes approximately 8.8 years for the parole population to double. By 1984, there will be almost 500 people on parole if nothing changes.

One often-used definition of recidivism is the number of inmates returned with a new sentence divided by the total number of inmates released from the prison on parole. Using this definition, the recidivism rate stays reasonably constant and, if it exhibits any trend, it shows a slight decrease from 34.8% in 1966, to 24.3% in 1975. In fact, the average recidivism rate over this 10 year period is 30.3%.

The situation at the Youth Development Center (YDC) is almost the same in that the population has remained relatively constant since 1968, with an average population of 190 ± 13**. The per capita cost of maintaining an inmate at the Youth Development Center in 1975 was $12,296 (see Figure V.2 for population and parole data).

*The standard deviation of the mean average daily population is 18.

**The standard deviation of the mean average daily population is 13.

FIGURE V.1

STATE PRISON
POPULATION AND PAROLE

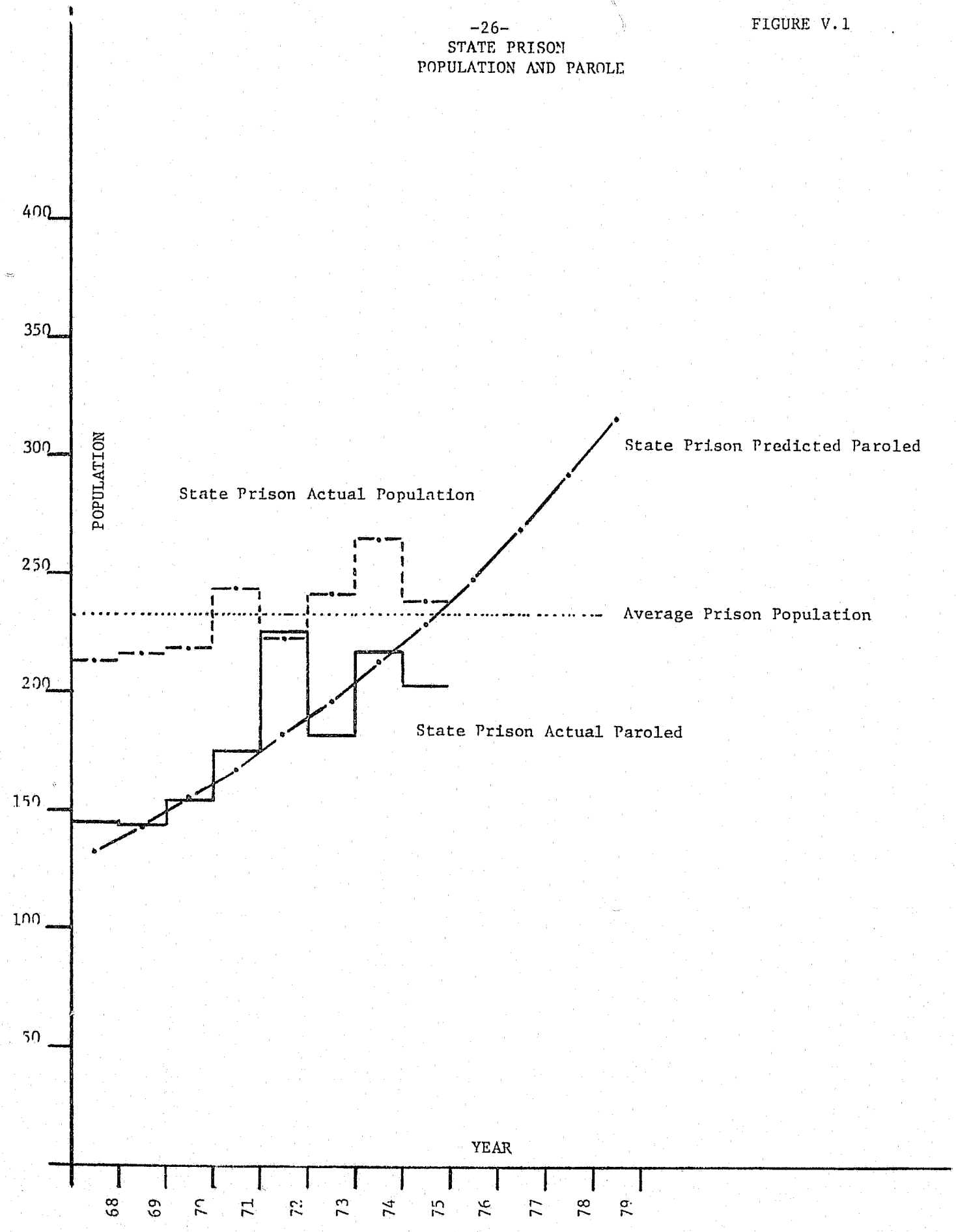


TABLE V.1

Percentage of violent offenses known to police which result in incarceration.

YEAR	INMATES/VIOLENT OFFENSES (PERCENT)		
		Actual	Calculated
1968	1	76	69
1969	2	67	63
1970	3	53	58
1971	4	42	52
1972	5	45	46
1973	6	37	40
1974	7	36	34
1975	8	34	28
1976			22
1977			16
1978			10
1979			5

$a_0 = 75.21$ $S_{y.x} = 6.04$

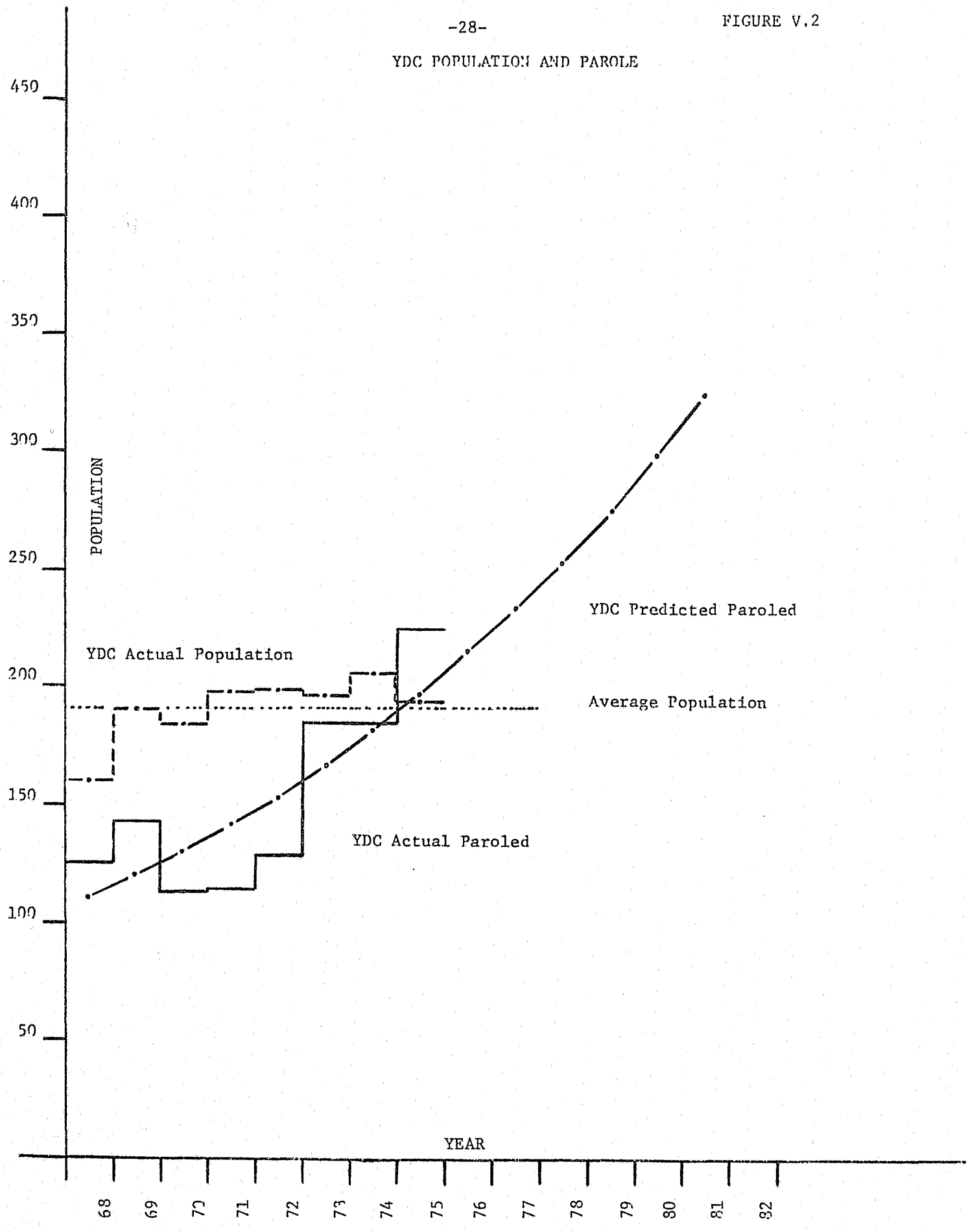
$a_1 = -5.88$ $S_0 = 4.71$

$r^2 = 0.87$ $S_1 = 0.93$

$r = 0.93$

FIGURE V.2

YDC POPULATION AND PAROLE



The County Houses of Correction account for most of the other available cell space in the State of New Hampshire. These 10 County Houses of Correction were designed to handle 542 prisoners. In 1976, the average daily inmate population at these 10 County Houses of Correction was 222. This equates to 41% of the original design capacity. Only prisoners whose sentence is for less than one year and a day are presently sent to Houses of Corrections. Prisoners with longer sentences go to the State Prison. Table V.2 presents an estimate of the average daily inmate population of the County Houses of Correction and the jails for 1976. The capacity figures take into account a recent court decision concerning the space allocation per prisoner.* This change in definition of capacity is a major factor increasing the percentage utilization of these facilities from 41% to 71%.

Analysis of data from the New Hampshire State Prison for 1976 shows that the average minimum sentence imposed by the courts was 2.81 years. The average time served during the same time period was 270 days. Table V.3 shows the average daily population, the average number of days served, and the throughput (the total number passing through each institution) for 1976.

Figure V.4 shows offender flow through the New Hampshire State Prison for the year 1974. Note the large number of prisoners who left the prison on conditional release. Only 4% left after completing their sentence.

*Federal District Judge Hugh Bownes - Opinion Handed Down on December 6, 1976.

TABLE V.2

BEST ESTIMATE AVERAGE DAILY INMATE POPULATIONS - 1976
HOUSES OF CORRECTIONS AND JAILS

COUNTY	HOUSES OF CORRECTION			JAILS			TOTALS		
	AVG. DAILY POP.	CAPACITY	% UTILIZATION	AVG. DAILY POP.**	CAPACITY	% UTILIZATION	AVG. DAILY POP.	CAPACITY	% UTILIZATION
Belknap	16.0	40	40	4.3	26	17	20.3	66	31
Carroll	8.6	28	31	2.0	8	25	10.6	36	29
Cheshire	19.7*	24	82	4.3	10	43	24.0	34	71
Coos	7.7	24	32	2.2	24	9	9.9	48	21
Grafton	10.6	24	44	4.0	40	10	14.6	64	23
Hillsborough	68.0	80	85	17.3	74	23	85.3	154	55
Merrimack	17.7*	20	89	10.8	24	45	28.5	44	65
Rockingham	34.0*	28	121	5.7	42	14	39.7	70	57
Strafford	32.7*	20	164	7.5	20	38	40.2	40	101
Sullivan	6.5*	22	30	4.3	8	54	10.8	30	36
STATE AVERAGE	221.5	310	71	62.4	276	23	283.9	586	48

*Based on Samples

**Based on 6 Samples - 1972-1975

FIGURE V.3

YDC AND STATE PRISON PAROLED

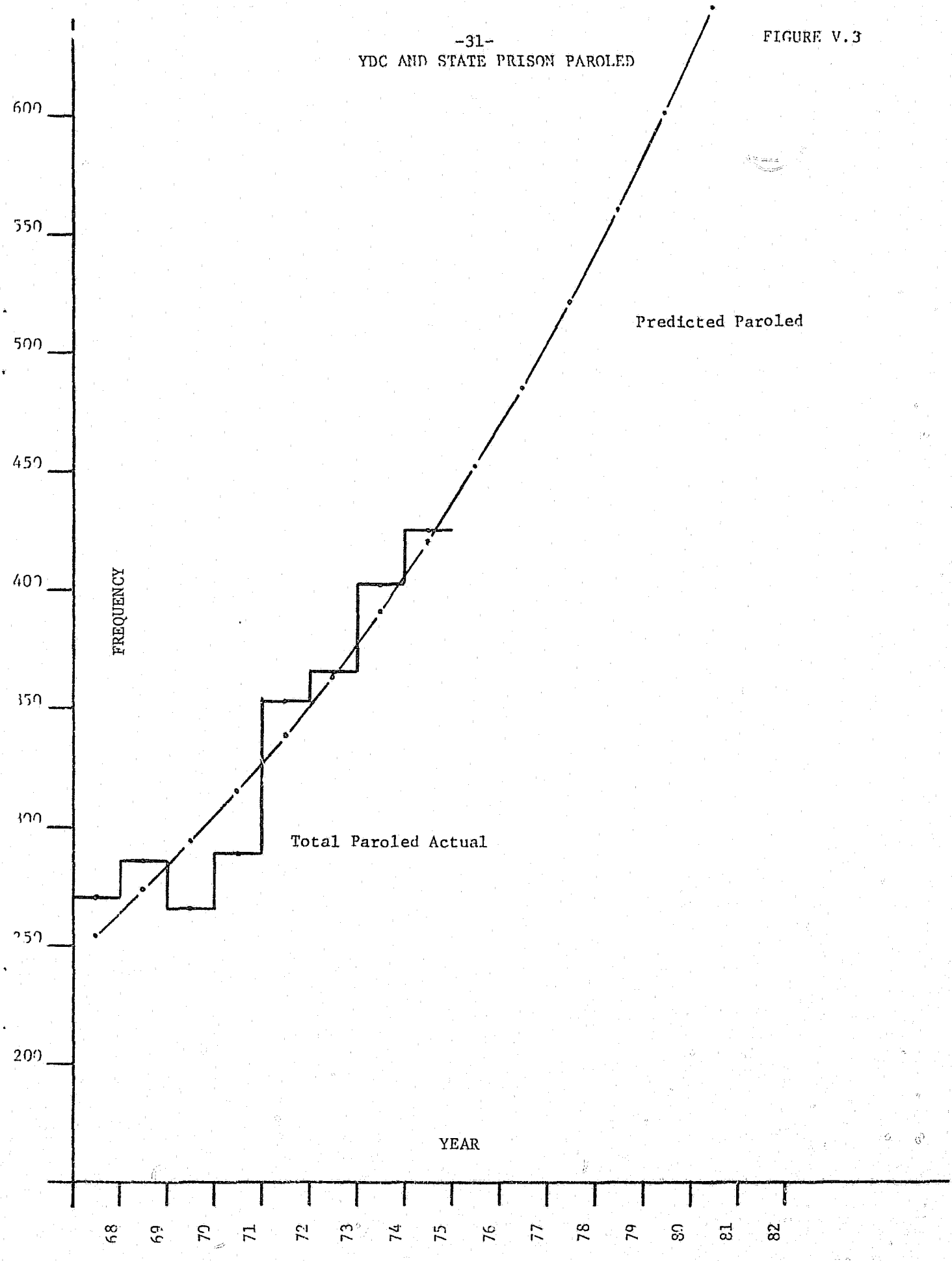


TABLE V.3

Throughput ($\overline{T}$), Average Daily Population ($\overline{P}$) and the Average Number of Days Served ($\overline{S}$) - 1976 Data.

	STATE PRISON	YOUTH DEVELOPMENT CENTER	HOUSES OF CORRECTION**	COUNTY JAILS**
(POPULATION) $\overline{P}$	232	190	222	62
(DAYS) $\overline{S}$	270	120*	55	9
(DAYS) $\overline{T}$	314	570	1,473	2,514

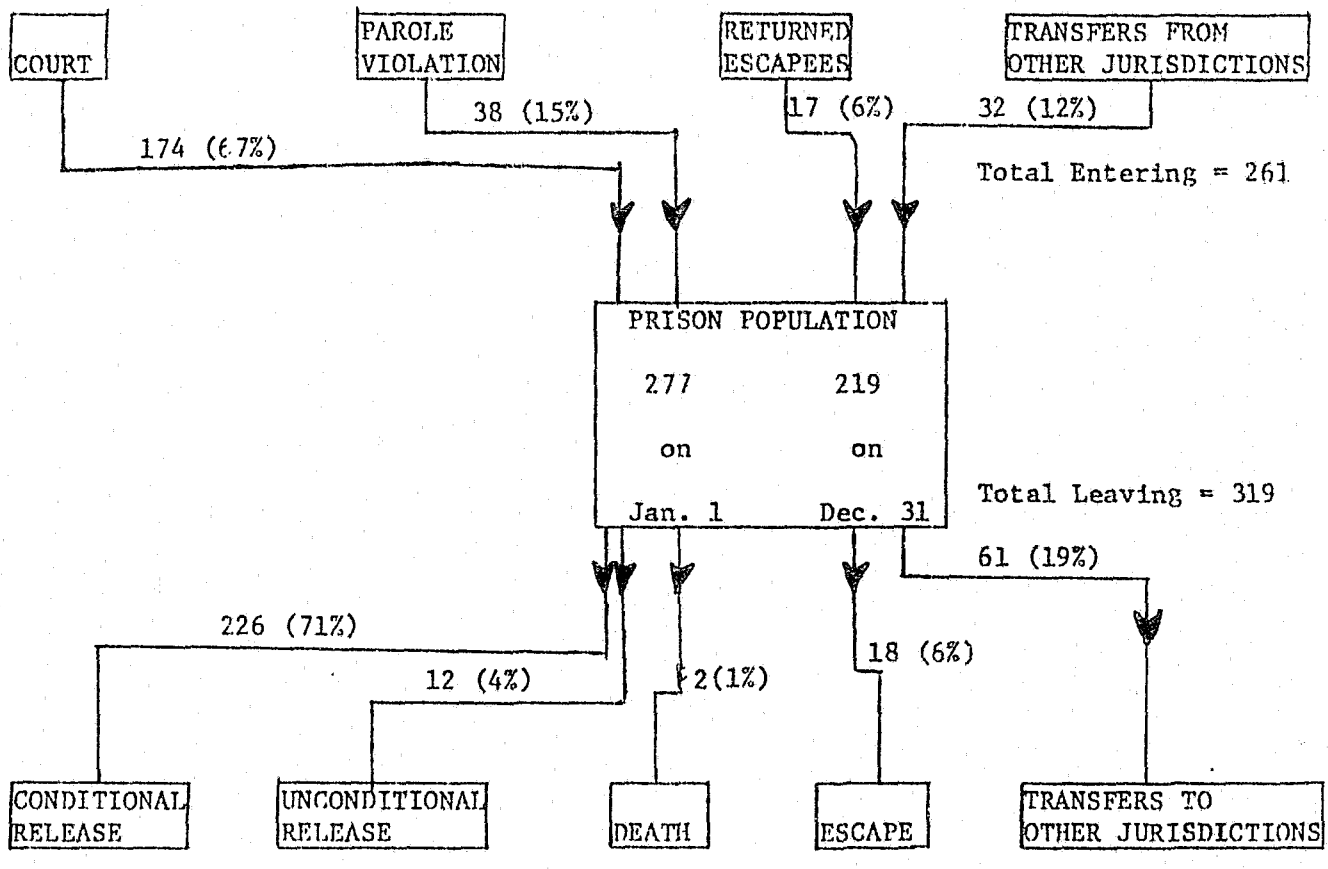
NOTE: $\overline{T} = 365\left(\frac{\overline{P}}{\overline{S}}\right)$

*$\overline{S}$ was estimated by knowledgeable personnel at the State Prison and at the Youth Development Center. $\overline{T}$ was calculated. It is interesting to note that NPS shows $\overline{T}$ to be 319 for 1974, and 298 for the period from July, 1974 through June, 1976.

**Data from county reports.

FIGURE V.4

FLOW THROUGH NEW HAMPSHIRE STATE PRISON JANUARY 1, 1974 TO DECEMBER 31, 1974 (11)



VI. TIME DELAYS THROUGH THE NEW HAMPSHIRE CRIMINAL JUSTICE SYSTEM (12)

In 1975, the average time delay through New Hampshire's Criminal Justice System from initial complaint or indictment to court disposition for felonies was 167.18 days, while, appeals in felony cases took an average of 197.25 days. If the data for felonies and appeals is combined, the average time for the process was 187.21 days.

The average time taken by the New Hampshire criminal justice system to process an alleged offender in 1975 is shown in Table VI.1. The greatest delay occurred between indictment and arraignment (73.43 days). The next longest delay came between the probable cause hearing and indictment (61.39 days). These long periods of time can be largely accounted for by prosecution and grand jury delays. A large delay (61.30 days) also occurs between arraignment and trial.

The time to process juveniles in 1975 was considerably shorter. The average time delay between petition and first appearance was 15.73 days. The average time delay between first appearance and disposition was 43.85 days. The time delay for an individual juvenile was often much longer. Fifty percent of the juvenile cases required three court appearances. Ten percent required four. The average time delay between petition and second appearance was 69.96 days, and the average time delay between petition and third appearance was 100.06 days.

TABLE VI.1

AVERAGE TIME DELAY - NEW HAMPSHIRE
CRIMINAL JUSTICE SYSTEM (1975)

STAGE OF PROCESS	TIME DELAY (DAYS)
Offense to Complaint	55.22
Complaint to First Appearance	14.71
First Appearance to Probable Cause	13.15
Probable Cause to Indictment	61.39
Indictment to Arraignment	73.43
Arraignment to Trial	61.30
Trial to Finding or Verdict	1.50
Finding or Verdict to Disposition	7.18

VII. SUMMARY AND CONCLUSIONS

This document has made use of existing data from segments of New Hampshire's criminal justice community. The information has been presented, insofar as possible, without making judgments or trying to influence the reader. Much of that which follows is judgmental and results from an analysis of the data in this report.

The violent crimes of murder, rape, aggravated assault and robbery account for approximately 3% of the serious crimes in New Hampshire. All segments of the New Hampshire criminal justice community deal effectively with these crimes. Most offenders who commit violent crimes are arrested, adjudicated and incarcerated.

The other 97% of the serious crimes consist of larcenies, burglaries and motor vehicle thefts. The remarks made below are pertinent to these offenses.

Long-range trends in crime show that the crime rate in New Hampshire has been increasing six times more rapidly than the population. As one consequence, court dockets are full. The number of cases pending in the courts at the end of the year is increasing faster than the number of cases disposed of. On the average, the New Hampshire prison is full. Therefore, criminals who go to prison are released after having spent a shorter and shorter time in jail.

Corrections facilities in the State have essentially been full for some time. One of the consequences of this fact is that people are released long before their sentences are completed. The number of people on parole continues to go up. Another serious consequence is that the saturation of the population of the prison limits the options of the court.

The courts are also in a situation which approaches saturation. One of the consequences of this is the long delay time requested to process cases through the courts. The jails fill while the accused await trial.

Police have an ever-increasing load due to the rapid increase in crime. New Hampshire's 1975 crime rate of 3,347 serious crimes per 100,000 population is approximately equal to the crime rate of 3,370 serious crimes per 100,000 population which was experienced in 1968 in the United States. It will be recalled that 1968 was the year in which the "War Against Crime" was launched because a crime rate of 3,370 was perilously high. Police only clear approximately 20% of the crimes they know about. Many police officers report that they spend a large portion of their time on non-criminal activities. In some jurisdictions this amounts to 80% of total available police time.

If it is assumed that one criminal accounts for one of the total estimated number of crimes, then the chance of a criminal actually being detained in a house of correction, prison or jail, is 4%. If each criminal commits more than one of the estimated crimes, this percentage is, of course, higher. If the assumption is that each one of the estimated crimes resulted in one victim then the chance of being a victim of a crime is about 11%. If each person is victimized more than once, instead of the above assumption, then, of course, the percentage is higher. One can only conclude that the chances of incarceration for the commission of a serious property crime is less than the chance of a person being the victim of a similar crime.

These results raise the question as to whether the probability of imprisonment in New Hampshire is sufficiently high to deter potential criminals. Even though the public may not be aware of the low probability of being incarcerated for committing a serious criminal act, the criminal, through his own experience with the system, knows that his chance of going to prison is small.

Summarizing these results, crime in New Hampshire is common and it involves a substantial portion of the population. Recent studies (4) show that there is a direct relationship between the crime rate and the certainty of punishment. The small probability of imprisonment in New Hampshire for the commission of serious offenses may be much too small to have any deterrent effect on criminal activity.

If the pressures on the criminal justice community in New Hampshire are to be reduced, new and inventive approaches are required. Proposed changes in one component of the system should not be undertaken without detailed study since changes in any one segment of the system will invariably have an impact on the other components of the system.

APPENDIX A

TECHNICAL DISCUSSION OF NEW HAMPSHIRE CRIME TRENDS

Data has been analyzed to establish long-range trends. The Crime Index including Violent and Property Crimes, Criminal Homicide, Forcible Rape, Robbery, Aggravated Assault, Burglary, Larceny-Theft and Auto Theft data was extracted starting with the 1959 UCR report of the F.B.I. Reference (2) containssthis data. Data from courts and correctional institutions were also analyzed.

Six different functional relationships between the data and time were tried. A regression curve was determined and the correlation coefficient calculated for each curve*. It was found that an exponentially increasing curve most nearly fits almost all of the data. The six functions tried are:

(Linear) $y = a + bx,$

(Exponential) $y = ae^{bx},$
$y = ax^{b},$
$y = a + b/x,$

(Hyperbolic) $y = 1/(a + bx),$ and
$y = x/(a + bx)$

Tables A-1 and A-2 show the computed values of the parameters of the exponential curves which best fit the data. Rate rather than index for the crime data was used because the population is thereby removed from the problem. The linear relationship between crime index and population has previously been established (2, 13).

Table A-1 also contains the parameters which show an exponential increase in New Hampshire population over the same 15 year interval.

Making use of these facts:

Eq. (1) Crime Index - (crime rate) x (population) + Constant

Eq. (1a) $I = RP + C$ in symbols

Eq. (2) $R = ae^{bt}$ where t is time in years, and

Eq. (3) $P = Ae^{Bt}$

*See Appendix B for a simplified derivation of regression and correlation coefficients.

TABLE A-1 NEW HAMPSHIRE PARAMETERS

CRIME CATEGORY	a	b	CORRELATION COEFFICIENT	T TIME TO DOUBLE (YEARS)	1974 CRIME INDEX
Index	277.26	0.1304	0.96	5.32	25,403
Violent	12.11	0.1253	0.96	5.53	739
Property	273.19	0.1241	0.95	5.59	24,664
Homicide	1.47	0.0304	0.31	22.80	28
Rape	2.52	0.0668	0.72	10.38	68
Aggravated Assault	4.79	0.1633	0.96	4.24	434
Robbery	3.21	0.1109	0.89	6.25	209
Larceny	54.75	0.1840	0.95	3.77	15,942
Burglary	186.39	0.0854	0.95	8.11	6,629
MV Theft	56.72	0.0820	0.94	8.47	2,093
Population	591,762	0.0209	0.99	33.16	808,000

ASSUMPTION:

$$\text{Rate} = ae^{b\,(\text{year}-1958)} \text{ and}$$

$$T = \frac{\ln 2}{b}$$

TABLE A-2 CORRELATION COEFFICIENTS

AND EQUATION PARAMETERS

	PARAMETERS a	PARAMETERS b	COEFFICIENTS Exponential ($Q = ae^{bt}$)	COEFFICIENTS Hyperbolic Curve $\{Q = 1/(a + bt)\}$	
Probation Data					
Dispositions					
Adult	970	0.1606	0.93		
Juvenile	577	0.0820	0.73		
Placed on Probation					
Adult	404	0.1178	0.86		
Juvenile	270	0.1152	0.84		
Parole					
State Prison	104	0.0789	0.90		
State Prison & YDC	237	0.0718	0.95		
Arrest Data					
Juvenile Arrest/100k Pop.	603	0.0501	0.97		
Juvenile Offenses Cleared by Arrest/100k Pop.	679	0.0538	0.99		
Arrests/100k	3,846	0.0111	0.46		
Courts (Criminal Cases)					
Superior Cases Entered	1,329	0.1407	0.98		
Disposed	1,280	0.1310	0.97		
Pending-End of Period	449	0.2068	0.98		
Supreme Entered	112	0.0744	0.90		0.91
Disposed	100	0.0707	0.83		0.87
Pending-End of Period	43	0.1810	0.99		
Mun. & Dis. Cases Entered	39,361	0.1300	0.991		

Combining results,

Eq. (4) $I = C = ae^{bt}\ Ae^{Bt} = De^{(b + B)t}$

Eq. (4a) $I = De^{(b + B)t} + C$

This result establishes the fact that Crime Rate, Crime Index and Population are all growing exponentially.

Table A-1 also tabulates correlation coefficients (r) for the same categories. Note that the coefficients are very high for all categories except Homicide and Rape. This is hardly surprising considering the small frequencies for these categories. National data on these two offenses follows a strong exponential trend.

The time it takes to double the Crime Rate is also computed for each category. The 1974 Crime Index is also shown. Note that the Crime Indexes for Rape and Robbery are small, and, therefore, statistical inferences made from this data cannot be taken seriously.

National data was also analyzed by the same technique for 15 years. Equation (4a) also describes this data. The correlation coefficients (r) are nearly 1.0 in every category for National data and the doubling time for crime in New Hampshire is less than the National doubling time for every category except Rape and Murder.

Table A-3 presents data from other portions of the New Hampshire and the National system. The only arrest data available was National data. In every case, an exponential curve was a good fit to the data. The doubling time in years (T) is calculated:

$$T = \frac{\ln 2}{b}$$

Where b is the coefficient of the exponent.

TABLE A-3 COMPARISON OF DOUBLING TIMES

Arrest Data	Number Years	N.H. T (Years)	U.S. T (Years)	1st Year of Data
Juvenile Offenses Cleared by Arrest/100k	11	-	12.9	1964
Number Juvenile Arrests/100k	14	-	13.6	1960
Number Arrests/100k	11	-	21.4	1960
Probation Data				
Court Disposition (Total)	7	5.12		1968
Adults	7	4.32		1968
Juveniles	7	8.45		1968
Placed on Probation (Total)	7	5.78		1968
Adult	7	5.88		1968
Juveniles	7	6.02		1968
Parole				
State Prison	10	8.79		1965
State Prison & YDC	8	9.66		1967
Courts				
Dist. & Mun. (Cases Entered)	10	5.30		1964-65
Superior (Entered)	10	4.66		1964-65
Disposed of	10	5.20		1964-65
Pending-End of Period	10	3.32		1964-65
Supreme (Entered)	10	9.32		1964-65
Disposed of	10	9.80		1964-65
Pending-End of Period	10	3.83		1964-65

APPENDIX B

DERIVATION OF COEFFICIENTS FOR A LEAST SQUARES FIT TO A STRAIGHT LINE AND AN EXPONENTIAL CURVE

1. Linear regression

Assume that the line

$$\text{Eq. (1)} \quad \hat{y} = a + bx$$

is a good fit to experimental data. a and b are to be determined so that the line is a "best fit" to the data. The criteria to be used to determine the "best fit" minimizes the sum of the squares of the vertical distances between the straight line and the experimental points.

Symbolically, a function G (a, b) is formed

$$\text{Eq. (2)} \quad G(a, b) = \sum_{i=1}^{n} (y_i - \hat{y}_i)^2$$

where

y_i is the y-axis value of the experimental data, $\hat{y}_i$ is the corresponding value on the curve, and n is the number of data pairs.

Substituting 1 in 2,

$$\text{Eq. (3)} \quad G(a, b) = \sum_{i=1}^{n} (y_i - a - bx_i)^2$$

G (a, b) is then the quantity to be minimized with respect to the parameters a and b. This can be accomplished by setting the partial derivatives with respect to these parameters equal to zero. This procedure results in the following two simultaneous equations:

$$\text{Eq. (4a)} \quad \sum_{i=1}^{n} (a + bx_i - y_i) = 0$$

$$\text{Eq. (4b)} \quad \sum_{i=1}^{n} (ax_i + bx_i^2 - x_i y_i) = 0$$

Performing the sums

$$\sum_{i=1}^{n} y_i = \sum_{i=1}^{n} (a + bx_i) = na + \sum_{i=1}^{n} bx_i \text{ and}$$

$$\sum_{i=1}^{n} x_i y_i = \sum_{i=1}^{n} ax_i + \sum_{i=1}^{n} bx_i^2$$

APPENDIX B
DERIVATION OF COEFFICIENTS FOR A LEAST SQUARES FIT TO A STRAIGHT LINE AND AN EXPONENTIAL CURVE (CONT.)

Now let

$$\frac{\Sigma x_i}{n} = \bar{x} \text{ and } \frac{\Sigma y_i}{n} = \bar{y}$$

then

$$\text{Eq. (5)} \quad a = \bar{y} - b\bar{x}$$

Continuing this kind of analysis, it can also be shown that

$$\text{Eq. (6)} \quad b = \frac{\Sigma x_i y_i - \frac{\Sigma x_i \Sigma y_i}{n}}{\Sigma x_i^2 - \frac{(\Sigma x_i)^2}{n}}$$

With these two values, which can be calculated totally from the experimental data, the straight line which "best fits" the data is determined. Note that no assumptions were made about the statistical nature of the data.

2. Exponential regression

Other curves may fit the data. The exponential fit follows easily from the previous derivation. Assume

$$\text{Eq. (7)} \quad y = ae^{bx} \quad \text{Then it is also true that}$$

$$\text{Eq. (8)} \quad \ln y = \ln a + bx$$

This is just the equation of a straight line where $y' = \ln y$ and

$$a' = \ln a$$

The parameters for a linear curve fit have already been determined, therefore, by analogy with what has been done above

$$\ln y \leftrightarrow y \text{ and } \ln a \leftrightarrow a,$$

$$x \leftrightarrow x \text{ and } b \leftrightarrow b,$$

$$\ln a = \frac{\Sigma \ln y_i}{n} - b\,\frac{\Sigma x_i}{n}, \text{ or}$$

APPENDIX B

DERIVATION OF COEFFICIENTS FOR A LEAST SQUARES FIT TO A STRAIGHT LINE AND AN EXPONENTIAL CURVE

$$\text{Eq. (9)} \quad a = \exp\left[\frac{\ln y_i}{n} - b\,\frac{\Sigma x_i}{n}\right], \text{ and}$$

$$\text{Eq. (10)} \quad b = \frac{\Sigma x_i \ln y_i - \frac{1}{n}\Sigma x_i \Sigma \ln y_i}{\Sigma x_i^2 - \frac{(\Sigma x_i)^2}{n}}$$

3. Correlation coefficients

Correlation coefficients are designed to measure how well experimental data fits the regression curve assumed for the data. The following discussion describes this measure. If the data is totally unrelated to the curve, the coefficient is zero. If every experimental value lies on the curve, the coefficient is 1. If the curve and the data are at right angles to one another, the coefficient is -1.

To be useful for comparison with other data, the measure has the following properties:

1. It is independent of the choice of origin of the coordinate system.

   $(x_i - \bar{x})$ and $(y_i - \bar{y})$, where

   $\bar{x}$ and $\bar{y}$ are average values, are such measures.

2. It is independent of the scale by which x and y are measured. This could be done by dividing by any quantity which has the same units as the measured quantity as long as it also measures the scale. The standard deviations s_x and s_y are such quantities.

   New variables which have these properties are:

   $$u_i = \frac{(x_i - \bar{x})}{s_x} \text{ and } v_i = \frac{(y_i - \bar{y})}{s_y}$$

   If v versus u were plotted, the experimental points would be distributed about the origin of the coordinate system v=u=o.

3. It has a positive value if both x and y have the same sign and a negative value if they have opposite signs. $u_i v_i$ has this property.

4. It does not depend on how many data points are included because then it is not possible to compare results each time new data is examined. This is accomplished by normalizing the data to the total number of data points.

APPENDIX B
DERIVATION OF COEFFICIENTS FOR A LEAST SQUARES FIT TO A STRAIGHT LINE AND AN EXPONENTIAL CURVE

The result of all of these considerations is:

$$r = \sum_{i=1}^{n} \frac{u_i \, v_i}{n s_x s_y}$$

where r is the correlation coefficient or regression coefficient.

Putting in all of the appropriate values,

$$r = \sum_{i=1}^{n} \frac{(x_i - \bar{x})\,(y_i - \bar{y})}{\sqrt{\frac{1}{n}\sum (x_i - \bar{x})^2}\,\sqrt{\frac{1}{n}\sum (y_i - \bar{y})^2}}$$

APPENDIX C

EXPLANATION OF THE NUMBER OF ARRESTS APPEARING IN THIS REPORT

New Hampshire has never collected the number of persons arrested for each offense, therefore, the number of arrests has been related to the number of offenses cleared by arrest in the following way:

The Total Part I Offenses 36,920 (NHCA)

Of Offenses Cleared by Arrest 9,186 (24.88% Clearance)

Of Offenses Cleared by the Arrest of Adults $= (9{,}186)\left(\frac{3{,}903}{5{,}829}\right) = 6{,}151$

(% of reported offenses cleared by arrest)

Of Offenses Cleared by the Arrest of Juveniles $= (9{,}186)\left(\frac{1{,}926}{5{,}829}\right) = 3{,}035$

To get arrests, the Minnesota report was used (3), page 38, arrests and offenses cleared by arrest were compared.

	ADULT	JUVENILE
$\frac{\text{\# Arrested}}{\text{\# Offenses Cleared by Arrest}} =$	0.61	1.53

Adult Arrests = (0.61) (6,141) = 3,752

Juvenile Arrests = (1.53) (3,055) = 4,644

TOTAL ARRESTS = 8,396

Using this technique, the number of offenses per arrest is shown to be:

$$\frac{\text{\# Part I Offenses}}{\text{\# Arrests}} = \frac{36{,}920}{8{,}396} = 4.40 \pm 0.07$$

APPENDIX C
EXPLANATION OF THE NUMBER OF ARRESTS APPEARING IN THIS REPORT

New Hampshire may not follow the same pattern as that in Minnesota, therefore, caution must be used in interpreting these numbers. The Nashua, New Hampshire, Police Department did provide numbers for 1975 which allows a comparison with this ratio. For Nashua:

$$\frac{\#\text{ Part I Offenses}}{\#\text{ Arrests}} = \frac{2,584}{471} = 5.49 \pm 0.36$$

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