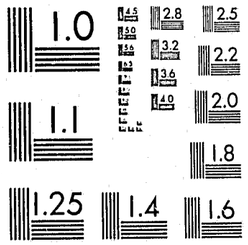

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Present
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PROJECTED ADULT MALE POPULATION LEVELS

FY1984 -- FY2000

Department of Correctional Services
Research and Planning Section
State of Nebraska
October, 1983

Numerous studies have confirmed a strong relationship between crime and unemployment. Several studies conducted by the Federal Bureau of Prisons found a strong direct association between unemployment rate and federal prison population levels. That is, whenever unemployment rates for men aged 20 or older rose or fell, prison population was observed to increase or decrease, respectively. The population fluctuations associated with unemployment were not observed immediately. Instead, the FBP studies found that a lag period of some 15 months elapsed from arrest through conviction and subsequent incarceration. Similar findings were reported by several states, although lag periods vary considerably.

Other studies have found that lengthy periods of joblessness contribute directly and significantly to higher rates of crimes known to the police, particularly crimes against property such as burglary and theft. Also, the rate of crimes known to the police has been found to vary directly with unemployment rate, and inversely with labor force participation rate (the proportion of the civilian non-institutional population employed or currently seeking work, and thus counted as part of the labor force). While rising unemployment rates indicate that a greater proportion of the labor force is unsuccessfully seeking work, declining participation rates indicate that increasing numbers of frustrated and discouraged workers have given up their search for employment. In summary, criminal behavior is observed to increase in response to actual and/or perceived lack of economic opportunity.

Sociologists have long recognized the influence of work upon the lives of individuals. The job is a source of both capital income and social status, and a primary determinant of individual identity and lifestyle. This fact is of particular importance to younger persons, who are in the process of establishing who and what they are and what patterns their lives will follow. Yet it is young men under 30 who exhibit the highest rates of unemployment and who commit a disproportionately large number of criminal acts, particularly crimes against property.

Public policy has generally relied upon the criminal justice system to deal with disapproved behaviors which themselves are often brought about or exacerbated by economic deprivation. Crime is dealt with by punishing the results and generally ignoring the causes. When inadequate access to legitimate economic opportunity denies people the chance to establish themselves and prosper by their efforts, some proportion of them may be expected to exhibit such socially-disapproved behaviors as crime, drug abuse, alcoholism, and suicide. Those exhibiting such behaviors are often imprisoned, institutionalized, or otherwise stigmatized and further estranged from "respectable" society and the labor market. The synergic linkage between unemployment and crime is critically important, since each acts to reinforce the other. The "vicious cycle", once established, maintains itself.

For a number of years, a strong association has been observed between unemployment rate within the Omaha standard metropolitan statistical area (SMA) and population levels of adult males in the custody of the Department. Custody population levels in this study include men who are institutionally confined, men on work/education release through the Post Care Programs, and men on parole.

In studies of this type, not all relevant variables can be identified, much less controlled. The effects of changes in practice or policy by legal and/or governmental agents cannot be predicted unless the nature and extent of those

changes can themselves be foreseen and estimated. Shifts in public opinion may influence the operation of the criminal justice system in some poorly understood manner. Similarly, changes in policy or practice by the Department or by the State Parole Board may affect both the magnitude and distribution of custody populations in unpredictable ways. The assumption of "ceteris paribus" (all else being equal)is central to the task of forecasting, in that all factors not explicitly considered in the model are assumed to remain constant. If this assumption is unfounded, the accuracy of forecasts derived from the model will suffer. These projections should be seen as our best estimates of future population levels, subject to several potentially disturbing influences whose effects simply cannot be known at the present time.

The dataset utilized in the deprivation of the prediction equation is found in Table 1. Figure 1A depicts standardized values of the three variables and illustrates their interrelation. Figure 1B depicts raw values of Omaha SMA unemployment rates. In this model, this fiscal-year monthly average population of adult males under departmental custody for fiscal years 1975-76 through 1982-83 is the dependent variable. Since the effects of unemployment may not impact population levels immediately and since those effects are known to persist over time, unemployment rates used as independent variables must also be lagged across time. In Table 1, Omaha SMSA unemployment rates are shown for both contemporary and preceding fiscal years, since custody population for a given fiscal year is predicted from unemployment rates of that fiscal year and the fiscal year immediately preceding. The appropriate prediction equation from the general linear model is

$$Y = A + B1(X1) + B2(X2) + E$$

where

Y = Adult Male Custody Population for Current FY
X1 = Omaha SMSA Unemployment Rate for Current FY
X2 = Omaha SMSA Unemployment Rate for Previous FY

The "new regression" subroutine of SPSS (Statistical Package for the Social Sciences) was applied to the dataset to obtain values for the coefficients, yielding the prediction equation

$$Y = 543.71209 + 32.20474\ (X1) = 176.04587\ (X2)$$

R-Squared = 0.91693
F = 27.59393 with 2 and 5 df, p = .0020

This model explains 91.7% of the variance in custody population, a (statistically) highly significant finding. The probability of a relationship of this magnitude occurring by chance alone is one in five hundred. The model is thus thought to be sufficient for our purposes.

Before speculating upon the potential course of unemployment, two facts should be considered. First, the State of Nebraska and the nation face an uncertain economic situation over the short term. Experts disagree over the current status of the economy and the course of its "recovery", and conflicting sociopolitical forces are at war in the economic arena. Some experts feel that the current economic travails are symptomatic of disorder far more serious than the periodic shifts and realignments of the business cycle which are to be expected in a market economy. If these notions of structural economic change are true, then

perceptions of fundamental economic issues will change radically. Second, the demographics of the "baby boom" may tend to support relatively high unemployment levels among younger men for some time. The population of males aged 18-39 should reach a plateau during the period FY86-90 and then decline for about a decade before beginning to rise again after the turn of the century, assuming stable reproductive and migration rates.

Since unemployment affects population levels over a span of time, the duration and severity of the economic downturn are critically important to predictive accuracy. The model outlined above indicates that a 1% rise in the Omaha SMSA unemployment rate during a given fiscal year can be expected to bring about 32 new admissions in that fiscal year, and some 176 new admissions in the following one. In other words, every 1% rise in unemployment can be expected to yield some 208 admissions. Given the currently unstable economic situation, it would be misleading to cite a single estimate of future populations. Consequently, three different scenarios of future events are presented as Table 2A, Table 2B, and Table 2C. Past and projected populations appear as Figure 2A, and past and projected future unemployment rates appear as Figure 2B.

The first scenario, presented here as Table 2A, is our "best case" or most favorable anticipated short-term outcome. Unemployment is assumed to decline proportionately to a "full-employment" level of 4.0% by FY90. Most analysts consider the chances of such a swift and smooth recovery to be possible but not the most probable outcome. Under this model, adult male custody population would reach a maximum of 2026 in FY84 and decline to 1448 in FY90.

The second scenario, presented here as Table 2B, is our "worst case" or least favorable anticipated short-term outcome. Unemployment is assumed to reach 9.0% in FY85 and improve slowly through the remainder of the decade, declining to 5.4% (the main level for FY76-83) by FY90. Although pessimistic, such a sequence of events is possible but not the most probable outcome. Under this model, adult male custody population would reach a maximum of 2395 in FY86 (some 28% above FY83 levels) and decline to 1809 in FY90.

The third scenario, presented here as Table 2C, is our "middle-of-the-road" or most likely anticipated short-term outcome. Derived from time series projections of future Omaha SMSA unemployment rates for the next seven fiscal years, it suggests that the economic recovery continues to gain strength from the present time forward, with unemployment declining to 5.16% by FY90. Under this model, adult male custody population would reach a maximum of 2011 in FY84 before declining to 1648 in FY90.

Prediction of institutional caseloads is more difficult. The relative proportions of custody population assigned to institutions, post care, and parole respectively have varied widely in the past, as shown in Table 3 and represented in Figure 3A (emphasizing ratios) and Figure 3B (emphasizing trends). Institutional population levels will probably pose the most stringent demands upon departmental resources in the future, due to the hazards of institutional overcrowding and the relative expense of incarceration versus community or parole supervision. Departmental and Parole Board policies cannot influence intake levels, but said policies can and do influence outflow levels and population distribution and must not be overlooked as mechanisms for resource management.

Table 3, Figure 3A, and Figure 3B show that the proportion of custody population

assigned to institutions has increased considerably in recent years, while the proportion assigned to post care has increased slightly and the proportion on parole has steadily declined. Declining parole proportions closely parallel rising institutional proportions. Projected institutional population level can be considered as a function of policy applied to projected total custody population level. Table 3 shows that the highest proportion of institutionalized offenders is observed in FY83 (77.5% of custody population) and the lowest proportion in FY80 (68.9% of custody population). These will serve as base levels for high and low estimates of institutional population, respectively. Likewise, the mean institutional proportion for the period FY76-FY83 (72.9% of custody population) will serve as an intermediate estimate of institutional population. Table 4A and Figure 4A show estimates derived from the "best-case" scenario, with institutional populations peaking within a range of 1396 (low) to 1570 (hifh) in FY84. Table 4B and Figure 4B show estimates derived from the "worst-case" scenario, with institutional populations peaking within a range of 1746 (low) to 1856 (high) in FY87. Finally, Table 4C and Figure 4C show estimates derived from the "most-likely" scenario, with institutional populations peaking within a range of 1386 (low) to 1559 (high) in FY84.

Another method yields mid- to long-range projections of future population using the logistic curve as a general model of growth patterns. Several curves are constructed from historical data and probable future levels of population are assessed by analysis of the curves. Strictly speaking, this method is not a statistical technique in that relative probabilities of error cannot be calculated. Its usefulness lies in framing population in terms of historical and demographic facts. Institutional population level is a function of (1) the size of the risk population (males 18-39), and (2) social policy, as indicated by the incarceration rate per 100,000 members of the risk population.

This series of projections, covering the period from FY50 through FY99, utilizes actual institutional population levels from FY50 through FY83 and actual incarceration rates per 100,000 males aged 18-39 for several base years, shown in Table 5A, with the highest incarceration rate (FY83) some 37% higher than the lowest (FY80). Risk populations for FY50, FY60, FY70, and FY83 are calculated from United States Census reports, and projections of risk population for other years are obtained from Nebraska Economic and Business Report No. 32 (November 1982) of the Bureau of Business Research of the University of Nebraska-Lincoln. The logistic curves derived for base years FY50, FY60, FY70, FY80, FY81, and FY83 are shown in Figure 5, and projected institutional populations are shown in Table 5B. Adult male institutional population may be expected to reach a maximum in FY86 and decline slowly thereafter through the turn of the century, with projected maxima ranging from 1083 to 1488 as a function of the incaceration rate.

In summary, adult male populations are expected to vary directly with Omaha-area unemployment. Total custody population will probably peak during the next three fiscal years (FY84-FY86) and decline slowly for the rest of the decade, with institutional population behaving in a similar fashion. However, sharp rises in unemployment, a stall in the apparent ecomonic recovery, or shifts in policy could easily lead to population levels considerably higher than expected.

TABLE 1

DATASET UTILIZED IN PREDICTION EQUATION

Fiscal Year	Average Adult Male Custody Population	Omaha SMSA Unemployment Rate	Omaha SMSA Unemployment Rate (1 yr lag)
76	1556	5.59	4.85
77	1722	4.95	5.59
78	1580	4.78	4.95
79	1484	4.00	4.78
80	1461	4.97	4.00
81	1522	5.64	4.97
82	1765	6.18	5.64
83	1865	7.19	6.18

TABLE 2A

SCENARIO 1

("BEST-CASE" OUTCOME)

Fiscal Year	Omaha SMSA Unemployment Rate	Omaha SMSA Unemployment Rate (1 yr lag)	Projected Adult Male Custody Population
84	6.7	7.19	2026
85	6.3	6.7	1927
86	5.8	6.3	1840
87	5.4	5.8	1739
88	4.9	5.4	1653
89	4.4	4.9	1549
90	4.0	4.4	1448

TABLE 2B

SCENARIO II

("Worst-Case" Outcome)

Fiscal Year	Omaha SMSA Unemployment Rate	Omaha SMSA Unemployment Rate (1 yr lag)	Projected Adult Male Custody Population
84	8.3	7.19	2077
85	9.0	8.3	2295
86	8.3	9.0	2395
87	7.6	8.3	2250
88	6.9	7.6	2104
89	6.2	6.9	1959
90	5.4	6.2	1809

TABLE 2C

SCENARIO III

("Most Likely" Outcome)

Fiscal Year	Omaha SMSA Unemployment Rate	Omaha SMSA Unemployment Rate (1 yr lag)	Projected Adult Male Custody Population
84	6.25	7.19	2011
85	6.06	6.25	1839
86	5.87	6.06	1800
87	5.68	5.87	1760
88	5.50	5.68	1721
89	5.33	5.50	1685
90	5.16	5.33	1648

TABLE 3

Historical Distributions Of Adult Male Custody Populations

Fiscal Year	Total	Institutional	Post Care	Parole
76	1556	1078 (69.3)	111 (7.1)	367 (23.6)
77	1722	1218 (70.7)	116 (6.7)	388 (22.6)
78	1580	1142 (72.3)	128 (8.1)	310 (19.6)
79	1484	1040 (70.1)	132 (8.9)	312 (21.0)
80	1461	1007 (68.9)	145 (9.9)	309 (21.2)
81	1522	1146 (75.3)	138 (9.1)	238 (15.6)
82	1765	1368 (77.5)	158 (9.0)	239 (13.5)
83	1865	1446 (77.5)	165 (8.8)	254 (13.7)

Figures in parentheses represent percentages of total.

TABLE 4A

Projected Adult Male Institutional Populations
By Policy Level -- Best-Case Scenario

Fiscal Year	Total	High (FY83 Level)	Low (FY80 Level)	Average (FY76-FY83)
84	2026	1570	1396	1477
85	1927	1493	1328	1405
86	1840	1426	1268	1341
87	1739	1348	1198	1268
88	1653	1281	1139	1205
89	1549	1200	1067	1056
90	1448	1122	998	1056

TABLE 4B

Projected Adult Male Institutional Populations
By Policy Level -- Worst-Case Scenario

Fiscal Year	Total	High (FY83 Level)	Low (FY80 Level)	Average (FY76-FY83)
84	2077	1610	1431	1514
85	2295	1779	1581	1673
86	2395	1856	1650	1746
87	2250	1744	1550	1640
88	2104	1631	1450	1534
89	1959	1518	1350	1428
90	1809	1402	1246	1319

TABLE 4C

Projected Adult Male Institutional Populations
By Policy Level -- Most-Likely Scenario

Fiscal Year	Total	High (FY83 Level)	Low (FY80 Level)	Average (FY76-FY83)
84	2011	1559	1386	1466
85	1839	1425	1267	1341
86	1800	1395	1240	1312
87	1760	1374	1213	1283
88	1721	1334	1186	1255
89	1684	1305	1160	1228
90	1648	1277	1135	1201

TABLE 5A

Risk Population (Males 18-39), Adult Male Incarcerated
Populations, and Incarceration Rates for Selected Fiscal Years

Fiscal Year	Adult Male Incarcerated Population	Risk Population (Males 18-39)	Incarceration Rate (Per 100,000)
50	831	211,225	393.42
60	891	184,443	483.08
70	925	204,053	453.31
80	1007	271,056	371.51
81	1146	276,294	41 .78

TABLE 5B

Projected Adult Male Incarcerated Populations
From Selected Base-Year Incarceration Rates

Fiscal Year	Base FY50	Base FY60	Base FY70	Base FY80	Base FY81	Base FY83	Risk Population
1976	955	1173	1101	902	1007	1240	242,845
1977	983	1207	1133	928	1037	1276	249,898
1978	1011	1241	1165	955	1066	1312	256,951
1979	1039	1275	1197	981	1095	1348	264,004
1980	1066	1309	1229	1007	1124	1384	271,056
1981	1089	1335	1255	1029	1149	1414	276,294
1982	1100	1351	1268	1039	1160	1429	279,717
1983	1114	1368	1284	1052	1174	1446	283,140
1984	1127	1384	1299	1065	1189	1463	286,563
1985	1141	1401	1315	1077	1203	1481	289,985
1986	1147	1408	1321	1083	1209	1488	291,440
1987	1145	1405	1319	1081	1207	1486	290,930
1988	1143	1403	1317	1079	1205	1483	290,420
1989	1141	1400	1314	1077	1202	1481	289,910
1990	1139	1398	1312	1075	1200	1478	289,400
1991	1134	1392	1306	1071	1195	1472	288,204
1992	1126	1383	1298	1064	1188	1462	286,324
1993	1119	1374	1289	1057	1180	1453	284,444
1994	1112	1365	1281	1050	1172	1443	282,564
1995	1104	1356	1272	1043	1164	1433	280,625
1996	1097	1347	1264	1036	1156	1424	278,808
1997	1090	1338	1255	1029	1149	1414	276,931
1998	1082	1329	1247	1022	1141	1405	275,054
1999	1075	1320	1238	1015	1133	1395	273,177
2000	1067	1311	1230	1008	1125	1386	271,300

Figure 1A
Standard Scores of Adult Male Custody Population
and Omaha SMSA Unemployment Rates

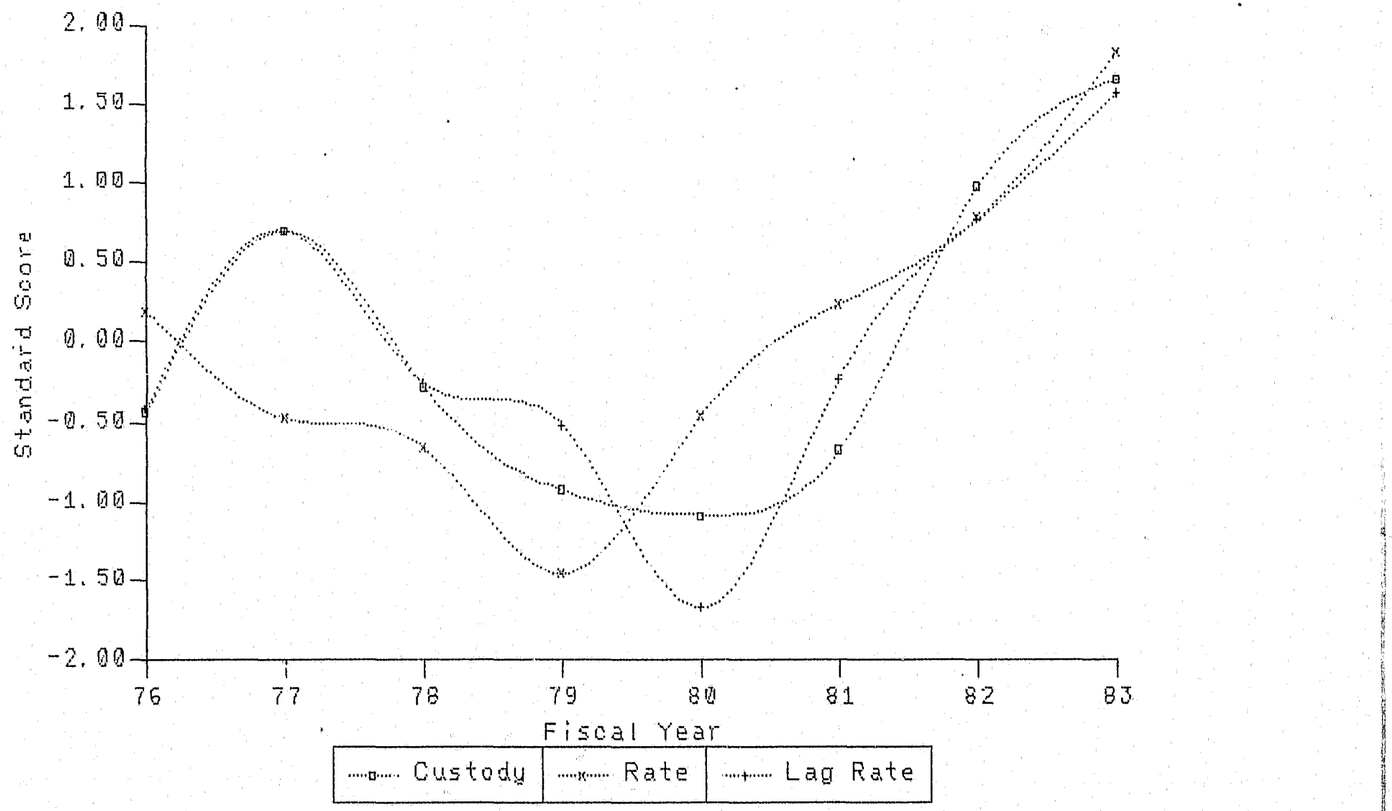


Figure 1B
Adult Male
Total Custody Population

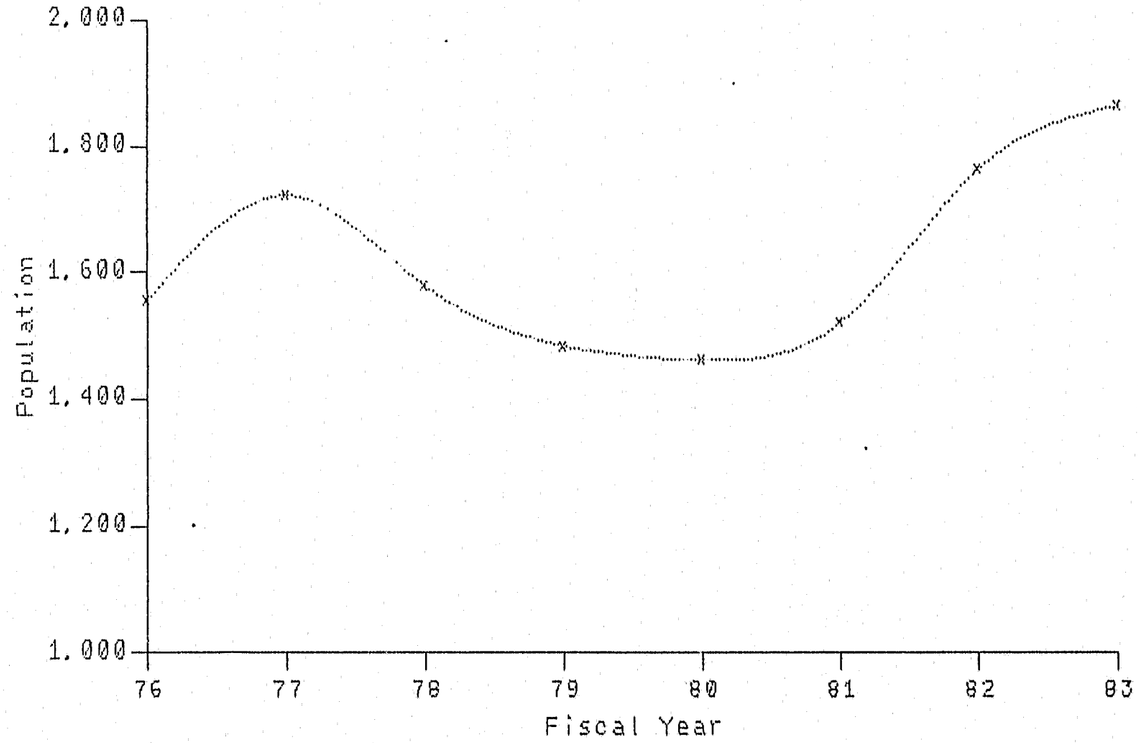


Figure 1C
Omaha SMSA
Unemployment Rate

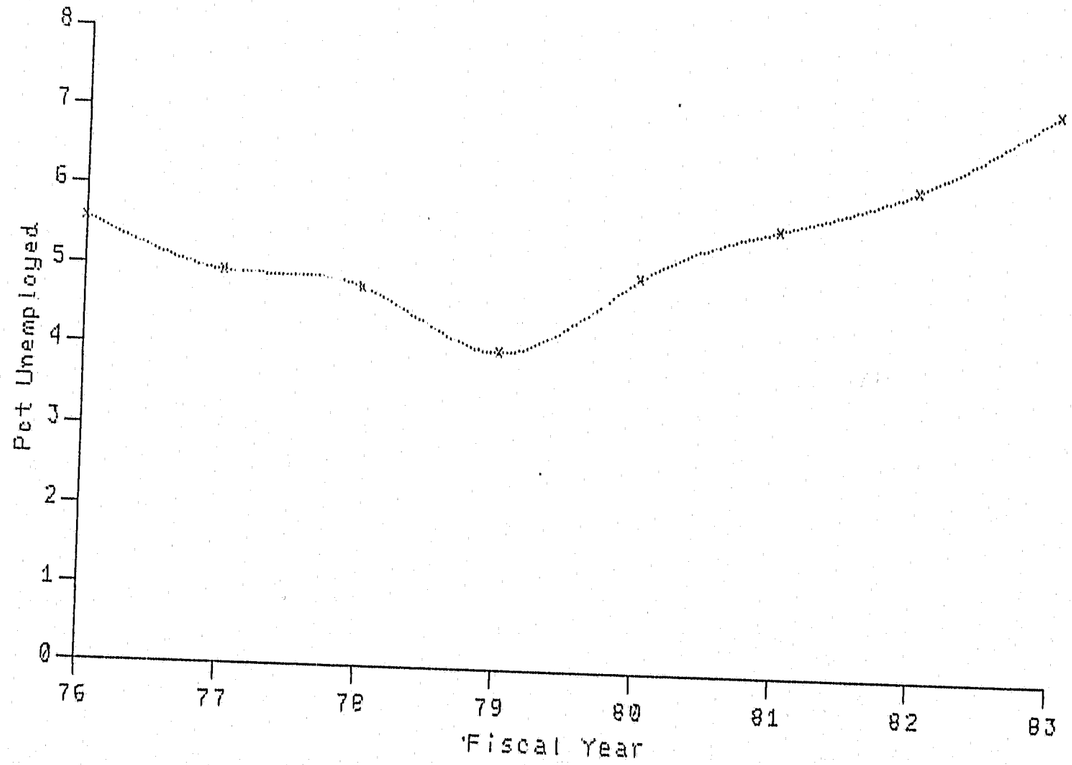


Figure 2A
Actual and Projected
Adult Male Custody Populations

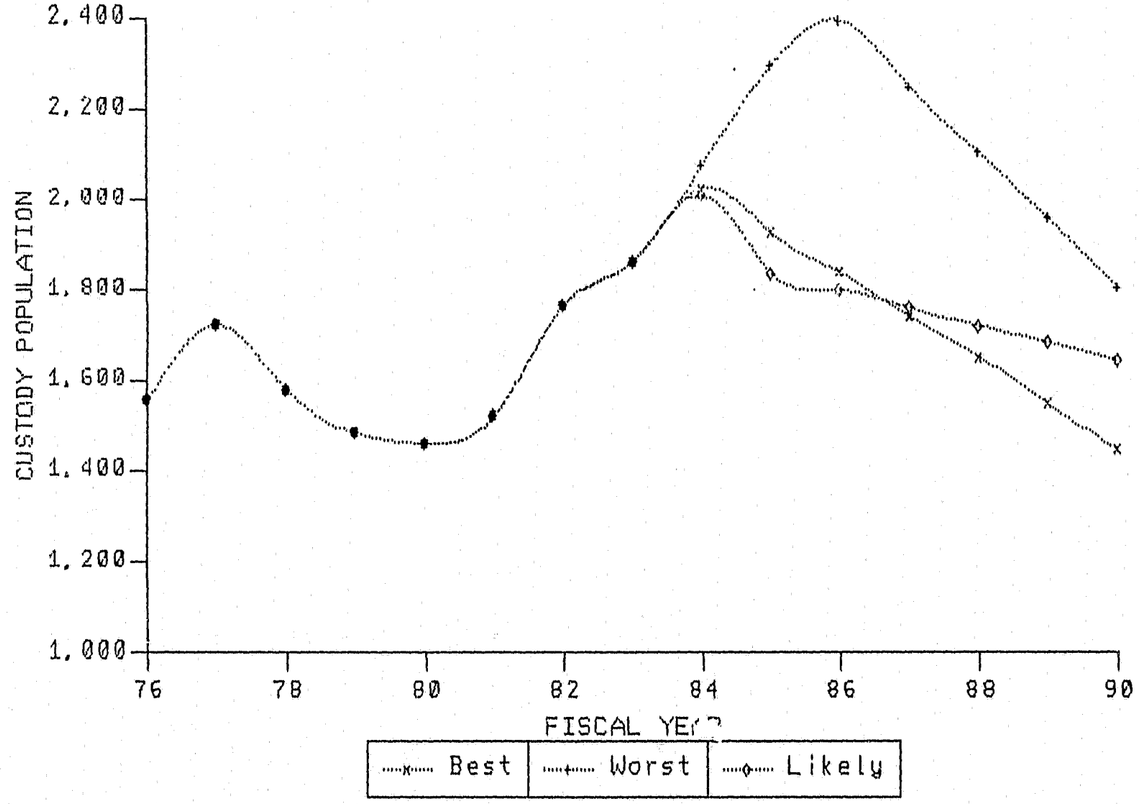


Figure 2B
Actual and Projected
Omaha SMSA Unemployment Rates

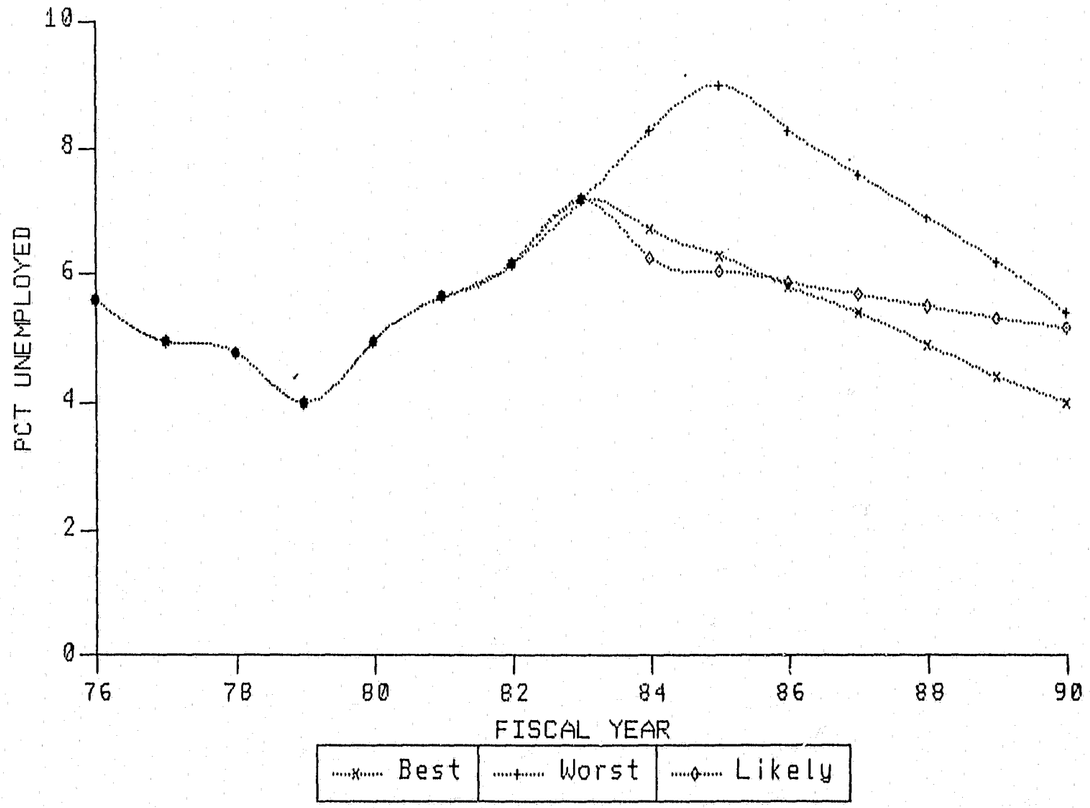


Figure 3A
Historical Percentage Distribution of
Adult Male Custody Population

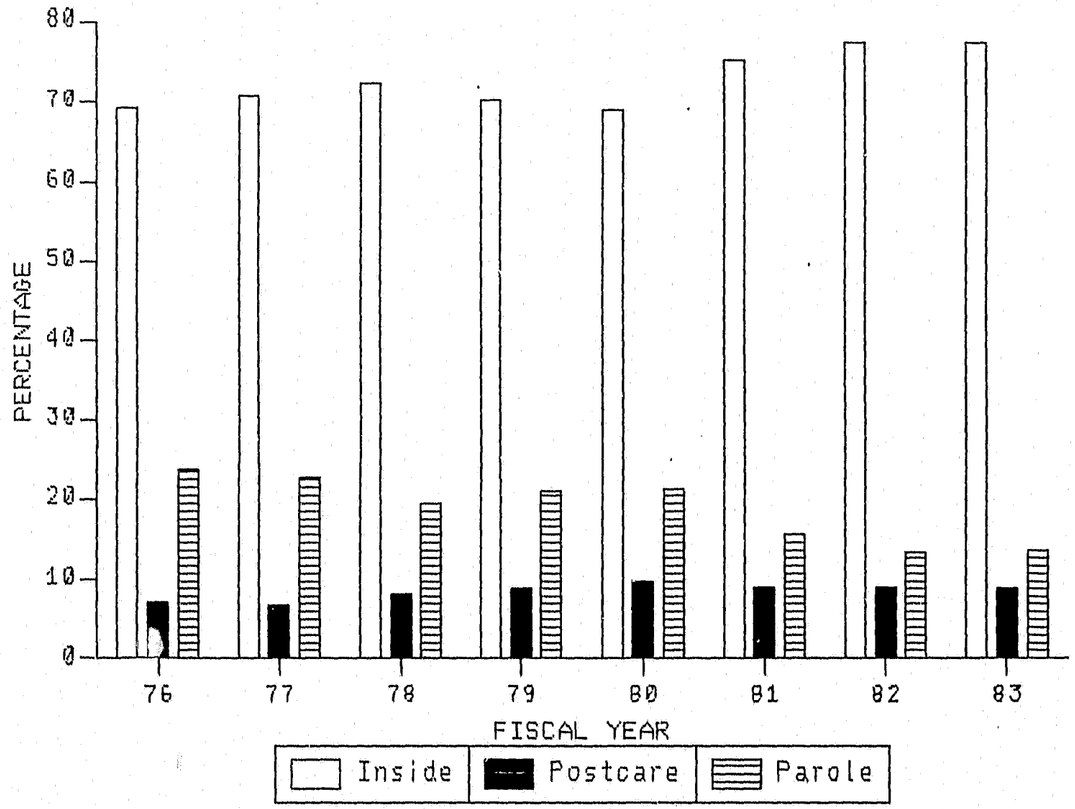


Figure 3B
Historical Percentage Distribution of
Adult Male Custody Population

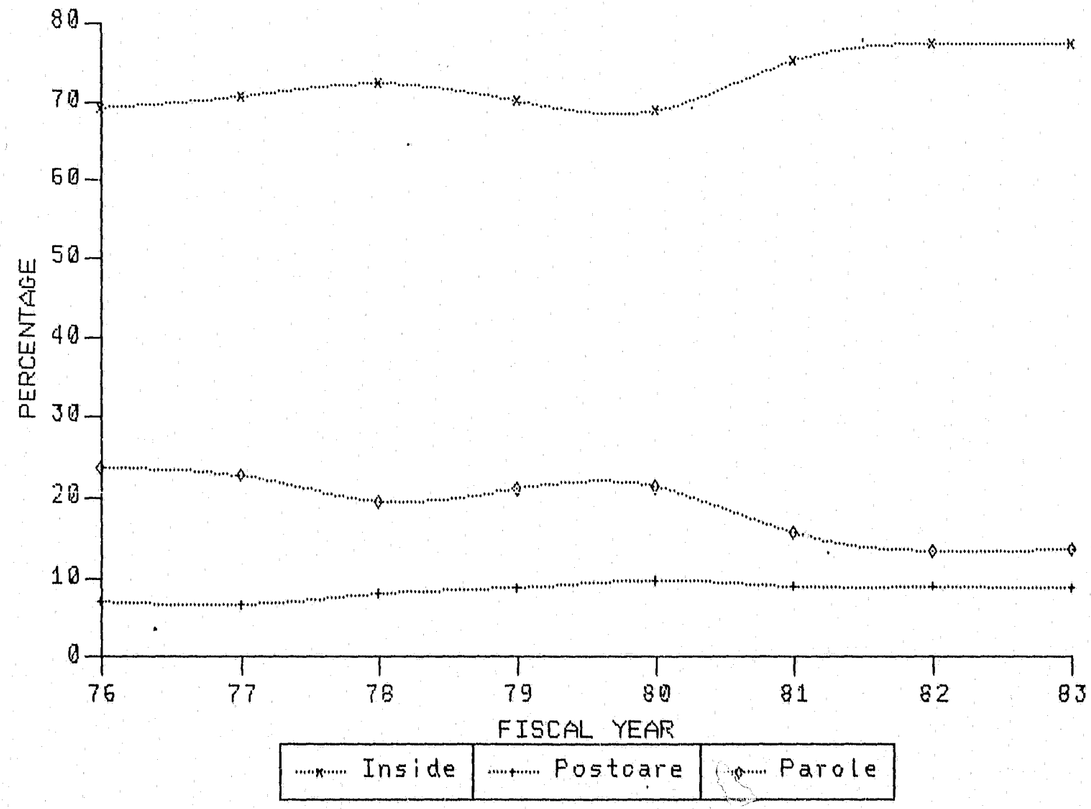


Figure 4A
Projected Adult Male Institutional Populations
by Policy Level -- Best-Case Scenario

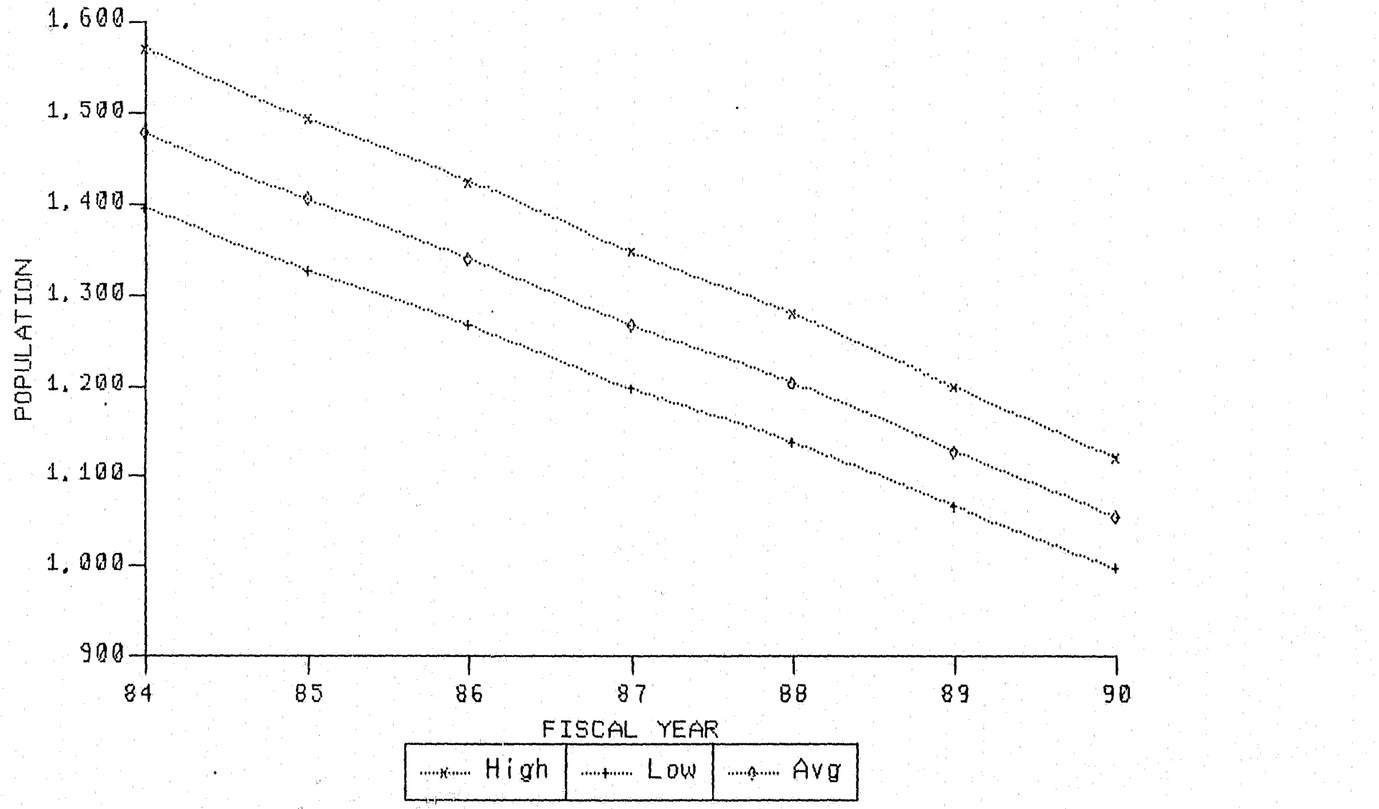


Figure 4B
Projected Adult Male Institutional Populations
by Policy Level -- Worst-Case Scenario

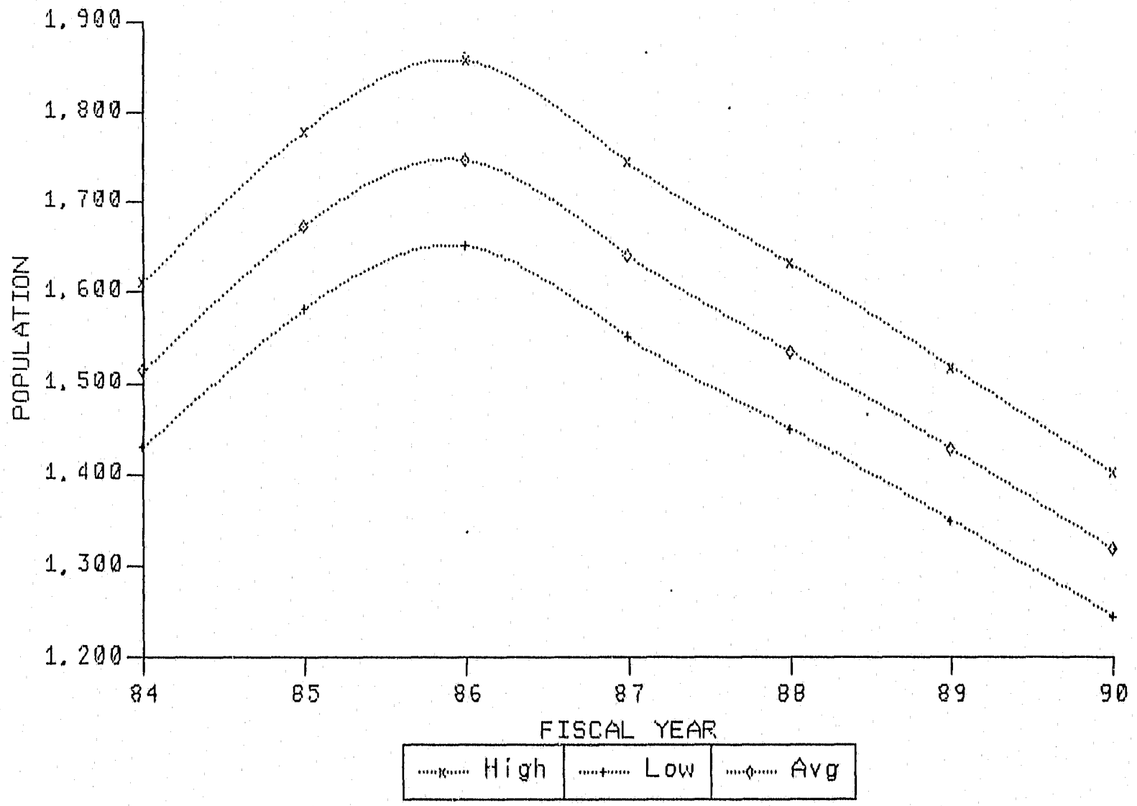


Figure 4C
Projected Adult Male Institutional Populations
by Policy Level -- Most-Likely Scenario

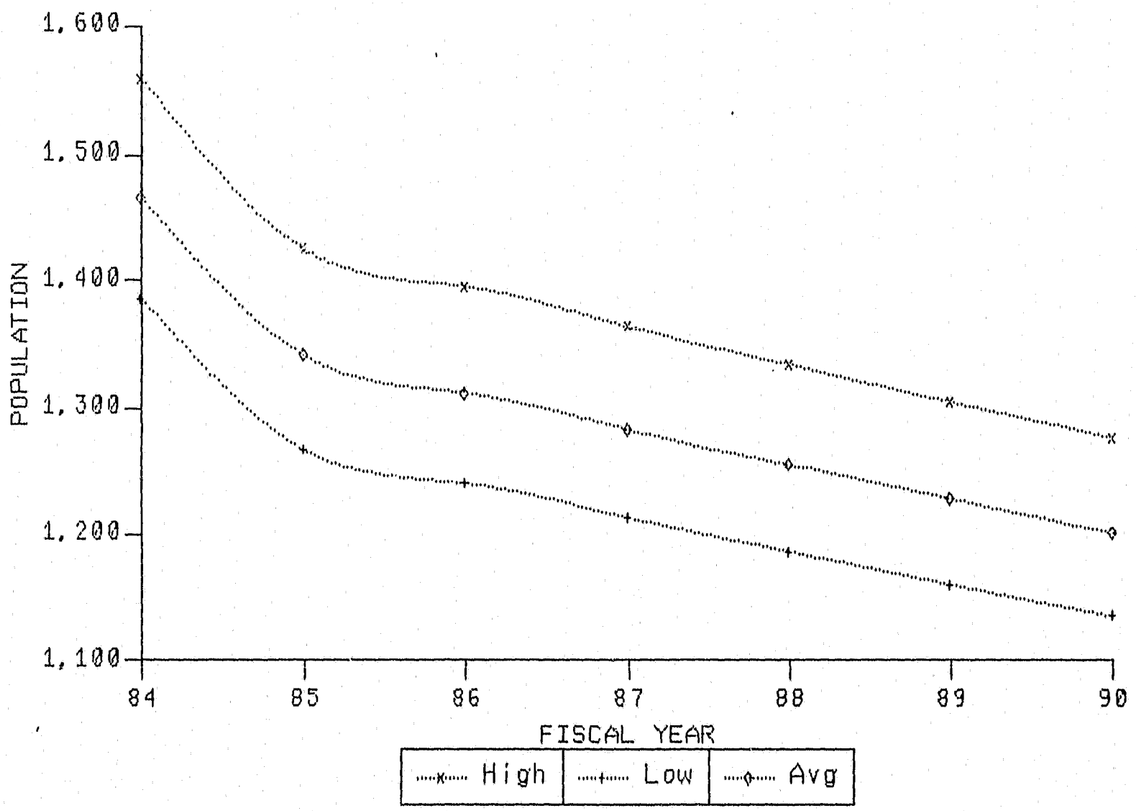
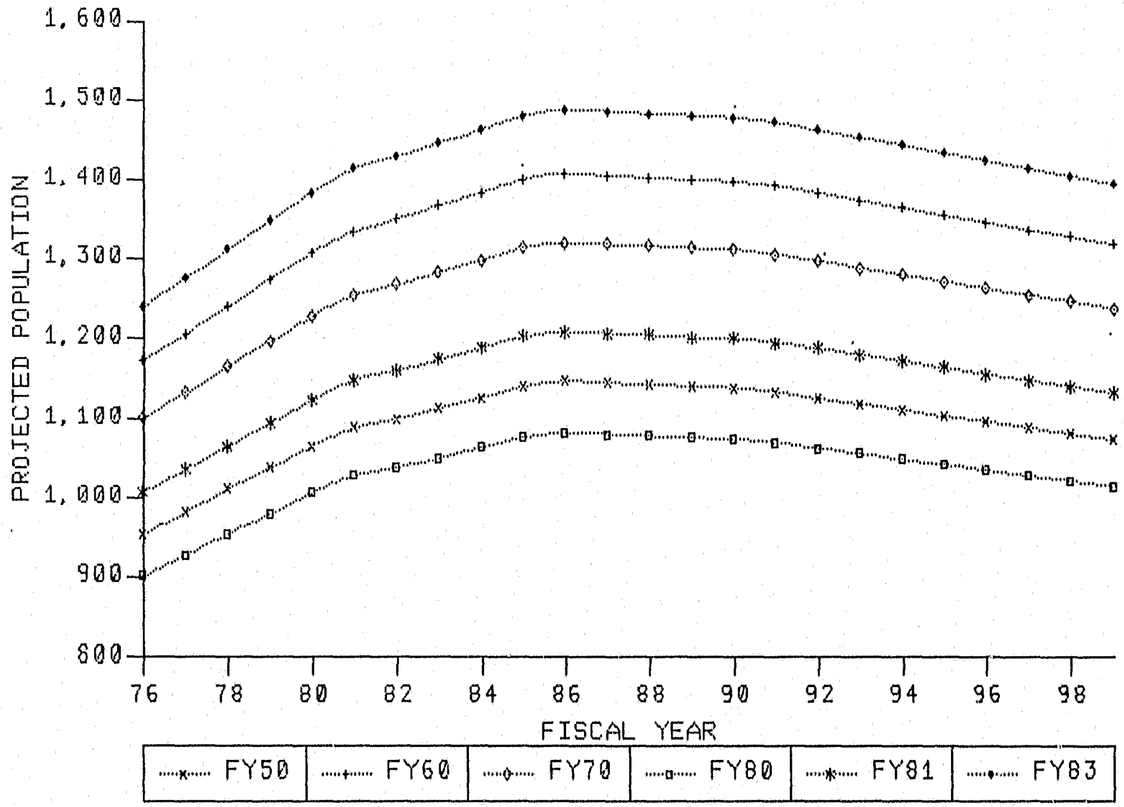


Figure 5
Projected Adult Male Institutional Populations
From Selected Base-Year Incarceration Rates



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