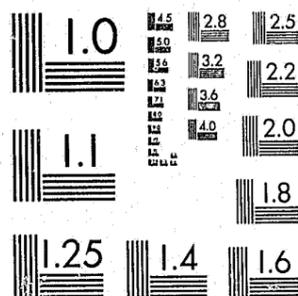


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**BURGLARY AND ROBBERY CASES IN CALIFORNIA 1973:
A STATISTICAL ANALYSIS OF THE RELATIONSHIP BETWEEN THE
DISPOSITION OF CRIMINAL CASES AND SELECTED SOCIAL,
ECONOMIC, AND CRIMINAL CHARACTERISTICS OF DEFENDANTS**

by

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CENTER FOR THE ECONOMETRIC STUDIES OF CRIME AND THE CRIMINAL JUSTICE SYSTEM

Hoover Institution
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JUL 23 1979

I. INTRODUCTION

ACQUISITIONS

This paper presents the results of an analysis of data from the Bureau of Criminal Statistics' 1973 Superior Court Adult Prosecution File.¹ This tape contains data about each of the 49,773 adult criminal cases which were disposed of in the superior courts of California in 1973.

Each record (sample) on the tape represents one case which was disposed of in superior court in 1973. It included information about the charge, the defendant, and the disposition of the case. Information about the charge includes:

- date of filing;
- most serious offense charged;
- type of proceeding (information/indictment/certification from municipal court).

Information about the defendant includes:

- year of birth (and hence age);
- race;
- sex;
- criminal record;
- status at time of arrest (probation/parole/incarceration/other);
- type of attorney.

Information about the disposition of the case includes:

- date of disposition;
- county of disposition;
- offense, if any of which defendant was convicted;
- how disposition attained (plea/dismissal/trial by judge or jury);
- sentence (if applicable).

Our objective in analyzing this data was to obtain a general idea of how the criminal justice system treated different types of defendants. In order to make the data more manageable and to reduce the variability and influence of unreported factors, we decided to focus our attention

on two types of crime. Robbery was selected because it is a "violent" crime which is fairly common and is of major concern to the public today. Furthermore, robbery generally involves fewer personal considerations (known relationships between victim and defendant) than a crime such as assault with a deadly weapon or rape. This would lead one to expect more uniformity in the courts' handling of robbery cases. We found 4069 robbery samples on the data tape. The other crime upon which we focused was burglary. This was because burglary is an exceedingly common non-violent crime which is also of substantial concern today. There were 9245 burglary samples on the data tape.

II. THE STATISTICAL TECHNIQUES EMPLOYED

The first step in our analysis involved cross-tabulations, partitioning on different variables for both the robbery and burglary data. While the tables suggested a number of interesting relationships, there are several difficulties in attempting to extract information by using cross-tabulations.² One is that the large number of variables involved results in an excess of output to interpret. A more substantial problem is that there may be interrelationships among the variables which are displayed and others which are not displayed; these interactions may go undetected. Finally, it is difficult or impossible to assess whether there is sufficient data to support the inferences which the tables suggest.

In order to separate the effects of the variables which we thought might be significant in influencing the outcomes of cases, we decided to use the technique of multinomial logit analysis. This technique is briefly summarized below.

The problem which faced us could be viewed as one of classifying different types of individuals. Groups of individuals are described by a set of independent variables with observable values. Each individual can fall into one of J categories (states) according to the outcome of his case and the sentence.

Let there be Q independent variables which are felt to determine the probability of the outcome, and let $p_j = p_j(x_1, x_2, \dots, x_Q)$ represent the probability that an individual will fall into group j. Then the probabilities have a multinomial logistic distribution if there exists a set of coefficients $\{\alpha_{ij}\}$ $i = 1, \dots, Q; j = 1, \dots, J$, such that

$$p_j = \frac{\exp(\sum_{i=1}^Q \alpha_{ij} x_i)}{\sum_{k=1}^J \exp(\sum_{i=1}^Q \alpha_{ik} x_i)}$$

Without loss of generality, we can normalize on the last state, J, to obtain

$$p_j = \begin{cases} \frac{\exp(\sum_{i=1}^Q \beta_{ij} x_i)}{1 + \sum_{k=1}^{J-1} \exp(\sum_{i=1}^Q \beta_{ik} x_i)} & , j \neq J \\ \frac{1}{1 + \sum_{k=1}^{J-1} \exp(\sum_{i=1}^Q \beta_{ik} x_i)} & , j = J \end{cases}$$

where

$$\beta_{ij} = \alpha_{ij} - \alpha_{iJ}; \quad j = 1, \dots, J-1$$

Suppose that we have M groups of individuals, all individuals within a group having identical characteristics. Let the independent variables be $x_{1m}, x_{2m}, \dots, x_{Qm}$ for the mth group. Then the probability that for each m, $m = 1, \dots, M$, a number r_{jm} of individuals will fall into the jth category is

$$P(\{r_{jm}\}, \{x_{im}\} | \{\beta_{ij}\}) = \prod_{m=1}^M \frac{1}{(\sum_{j=1}^J r_{jm})!} \prod_{j=1}^J \frac{1}{r_{jm}!} p_{jm}^{r_{jm}}$$

In fact, we know the observed values of the x's and r's and wish to estimate the coefficients $\{\beta_{ij}\}$. The likelihood function L can be viewed as a function of β 's which takes the x's and r's as given:

$$L = L(\{\beta_{ij}\} | \{x_{im}\}, \{r_{jm}\}) \equiv P(\{r_{jm}\} | \{x_{im}\}, \{\beta_{ij}\})$$

The estimate of the β 's which we choose is the one which makes L as large as possible; this is called the maximum-likelihood estimate. Thus, the problem with which we are confronted becomes:

$$\begin{aligned} \text{Maximize } L &= L(\{\beta_{ij}\} | \{x_{im}\}, \{r_{jm}\}) \\ &= K \prod_{m=1}^M \prod_{j=1}^J p_{jm}^{r_{jm}} (\{\beta_{ij}\} | \{x_{im}\}, \{r_{jm}\}) \end{aligned}$$

$$\text{where } K = \sum_{m=1}^M \frac{(r_{1m} + \dots + r_{Jm})!}{r_{1m}! \dots r_{Jm}!} \quad \text{and does not depend on the } \beta \text{'s.}$$

We note that $\ln(L)$ is a monotone increasing function of L , and $L > 0$. Hence, the problem is equivalent to finding $\{\beta_{ij}\}$ which maximizes

$$\ln(L/K) = \sum_{m=1}^M \sum_{j=1}^J r_{jm} \ln(p_{jm})$$

where

$$p_{jm} = \begin{cases} \frac{\exp(\sum_{i=1}^Q \beta_{ij} x_{im})}{S_m} & , j \neq J \\ 1/S_m & , j = J; \end{cases}$$

and

$$S_m = 1 + \sum_{k=1}^J \exp(\sum_{i=1}^Q \beta_{ik} x_{im})$$

From the fact that L is an infinitely differentiable function of the β 's, it follows that the matrix

$$\left[-\frac{\partial^2 \ln(L)}{\partial \beta_{ij} \partial \beta_{kl}} \right] \rightarrow \left[I(\beta_{ij}) \right]^{-1} \text{ as } \sum_{m=1}^M r_{jm} \rightarrow \infty, \text{ for all } j$$

where $I(\beta_{ij})$ is the covariance matrix of β 's.³ Furthermore, the β 's are asymptotically normally distributed. Therefore, we can proceed with a stepwise elimination of those variables whose coefficients are not statistically significant at some predetermined level, which in this case we chose to be 90%. Eliminating some variables from

some outcome states makes Q dependent upon the state (j), and also necessitates some minor changes in the subscripting in the above equations.

Although, if a coefficient β_{ij} is positive then increasing x_i does increase the probability of falling into state j , relative to that of falling into state J , it does not follow that increasing x_i will cause an increase in the absolute probability of falling into state j . This is because it may be true that for some value(s) of k , $\beta_{ik} > \beta_{ij}$. The resulting increase in p_k may, through normalization, lead to a decrease in p_j in order to keep the sum of the p 's equal to one. Therefore, it is helpful to devise a techniques which enables us to describe the net effects of changes in each x_i upon the p 's.

In the particular formulation of the problem which we employed, each independent variable x_i could only attain the value 0 or 1. This made it relatively easy to devise a technique to display the effects of the independent variables.

Suppose we wish to display the effect of the k th variable, x_k . We first compute the values \bar{x}_i , $i = 1, \dots, n$, which are the mean values of each x_i for all the sample groups where $x_k = 1$. The values $\bar{x}_1, \dots, \bar{x}_{Q_j}$ might be thought of as describing the "average" individual for whom $x_k = 1$. Then, for each j , we compute

$$p_{j0} = p_j(\bar{x}_1, \dots, \bar{x}_{k-1}, 0, \bar{x}_{k+1}, \dots, \bar{x}_{Q_j})$$

and

$$p_{j1} = p_j(\bar{x}_1, \dots, \bar{x}_{k-1}, 1, \bar{x}_{k+1}, \dots, \bar{x}_{Q_j})$$

The value p_{j0} gives us a "base" probability for the v th variable, and the value $p_{j1} - p_{j0}$ gives us the change in p_j which results from setting $x_k = 1$.

It is also possible to estimate the variances of these effects.

For each k and j , let

$$D = \begin{bmatrix} \frac{\partial p_{j0}}{\partial \beta_{11}} & \dots & \frac{\partial p_{j0}}{\partial \beta_{Q_1,1}} & \dots & \frac{\partial p_{j0}}{\partial \beta_{Q_{J-1},J-1}} \\ \frac{\partial p_{j1}}{\partial \beta_{11}} & \dots & \frac{\partial p_{j1}}{\partial \beta_{Q_1,1}} & \dots & \frac{\partial p_{j1}}{\partial \beta_{Q_{J-1},J-1}} \end{bmatrix}$$

Compute

$$V = D C D^T$$

Then $\text{var}(p_{j0}) = v_{11}$

$\text{var}(p_{j1}) = v_{22}$, and

$\text{cov}(p_{j0}, p_{j1}) = v_{12}$

Consequently, $\text{var}(p_{j1} - p_{j0}) = v_{11} + v_{22} - 2v_{12}$.

III. COMPUTATIONS AND RESULTS

The set of personal and institutional characteristics which, based on our initial cross-tabulations, we thought would be likely to affect the outcome of burglary and robbery cases and which were included on the data tape were:

- age of defendant;
- race of defendant;
- sex of defendant;
- criminal record of defendant;
- type of county;
- type of defense attorney.

Of these factors, only one, age, is naturally quantifiable, and we had no reason to posit a specific functional relationship between age and outcome. Therefore, we broke each factor down into variables which were either 0 or 1, thereby representing qualitative traits. These were

- Age: { 18 - 21
21 - 26*
26 - 35
35 or older

- Race: { White*
Mexican
Negro

- Sex: { Male*
Female

- Criminal Record: { None
Minor record
Major record*
One prison commitment
Two or more prison commitments

- County: { San Francisco or Los Angeles
Suburban*
Rural

- Defense Attorney: { Court-appointed*
Privately-retained
Non-white defendant with privately retained attorney

In each of the above groups of variables, exactly one variable can have the value 1 for any given observation; the other variables in the group must be zero. This means that the variables within a group are linearly dependent. Since there are more than one group of variables the model is over-parameterized and so not estimable. One way to reformulate the problem so as to avoid this is to delete one variable from each group and add a variable which is always 1. The variables marked with an asterisk (*) above were deleted. These variables were also the most frequent within each respective variable group, and all are absorbed into the constant. This set of attributes defines the base group and all estimated coefficients represent contrasts or adjustments to the constant term - the portmanteau variable of the base group.

Most of the variable names used above and in the tables are self-explanatory; however, those used for criminal record and county bear some explanation.

A suburban county was defined to be one of the following: Alameda, Contra Costa, Orange, Sacramento, San Diego, San Mateo, or Santa Clara. The remaining counties, except for Los Angeles and San Francisco, are labeled "rural," although many, in fact, are more suburban in character. The primary reason for this particular breakdown was to classify counties into groups of comparable total population. San Francisco and Los Angeles were singled out for special treatment because they have high population densities and are the commercial centers of the state, leading us to expect greater court congestion, due to numerous civil cases. The cross-tabulations also showed longer times to disposition in these counties.

The criminal record classifications had to be based upon those used on the data tape, since that was all that was available. A "minor record" is defined to constitute one or more arrests without disposition, or some convictions but no sentence of 90 days or more in jail or 2 or more years probation. A "major record" is defined to constitute at least one conviction with a sentence of at least 90 days jail or 2 years probation, but no prison commitments. The other terms are self-explanatory. Several variables were used for criminal record because the cross-tabulations showed a strong relationship between criminal record and severity of sentence.⁴

For each offense, we selected seven outcomes ("states") which described the possible sentence results. For robbery, these were:

- (1) Dismissal or acquittal
- (2) Probation, suspended sentence, or a fine only (no jail)
- (3) Some jail, but at most 7 months (possibly in conjunction with probation or a fine)
- (4) More than seven months in jail or commitment to the California Youth Authority⁵
- (5) Commitment to the California Rehabilitation Center of Mentally Disordered Sex Offender Program (almost entirely CRC)
- (6) Commitment to prison for a crime other than robbery (almost surely representing a plea bargain)
- (7) Commitment to prison for either first or second degree robbery.

For burglary, the possible outcome states selected were:

- (1) Dismissal or acquittal

- (2) Probation, fine, or suspended sentence only (no jail)
- (3) Not more than 3 months jail
- (4) More than 3, but at most 7 months jail
- (5) More than 7 months jail, or commitment to the Youth Authority
- (6) Commitment to the California Rehabilitation Center of Mentally Disordered Sex Offender program (again, almost entirely CRC)
- (7) Commitment to prison for any offense.

The results of the computations are displayed in the tables on the following four pages.

IV. DISCUSSION OF RESULTS

As discussed above, it is possible for a coefficient, β , to be positive for a given variable and outcome state, and yet for that variable to have a net negative effect on the probability of falling into the particular outcome state. Consequently, it is easier to look at the net effects of the variables. The net effect of any particular variable depends upon the values of the other variables. For purposes of discussion, it is helpful to display the effect upon a "typical" individual. As mentioned in the previous section, for a given variable, a "typical" or "average" individual is one whose attributes (the values of the remaining variables) are the sample means for all individuals who have the attribute described by the given variable. For each of the seven states and the fifteen variables, the tables display the base probability, change in probability attributable to the given variable being

ESTIMATES OF THE COEFFICIENTS OF THE LOGISTIC MODEL

Offense: Robbery

	Dismiss/Acquit	Probation/Fine	Jail 0-7 mos.	Jail > 7/CYA	CRC/MDSO	Prison/Lesser
<u>CONSTANT</u>	-2.21 (-12.44)*	-2.74 (-11.31)	-1.05 (-8.33)	-0.66 (-4.39)	-1.36 (-8.35)	-2.54 (-13.60)
<u>AGE</u>						
18-21	0.49 (2.54)	0.72 (3.10)	0.82 (4.90)	1.29 (8.55)	----- -----	----- -----
26-35	----- -----	0.68 (2.91)	----- -----	----- -----	----- -----	----- -----
35+	0.67 (2.56)	1.54 (4.62)	0.51 (1.73)	----- -----	----- -----	----- -----
<u>RACE</u>						
Negro	1.10 (6.76)	0.32 (1.65)	----- -----	----- -----	-0.46 (-1.84)	----- -----
Mexican	----- -----	0.43 (1.75)	----- -----	----- -----	----- -----	----- -----
<u>SEX</u>						
Female	1.83 (6.67)	1.53 (4.85)	1.11 (3.93)	----- -----	1.23 (2.59)	1.50 (2.65)
<u>CRIMINAL RECORD</u>						
No record	1.67 (5.92)	2.36 (7.86)	2.17 (8.72)	1.01 (4.01)	----- -----	----- -----
Minor record	0.71 (3.58)	1.40 (6.12)	1.12 (6.18)	.60 (3.64)	----- -----	----- -----
One prison com.	----- -----	-1.14 (-2.66)	-0.84 (-2.74)	-0.88 (-3.62)	----- -----	0.58 (1.67)
Two+ prison com.	-1.01 (-2.88)	-3.44 (-3.32)	-1.62 (-3.71)	-1.29 (-4.24)	-1.41 (-2.67)	----- -----
<u>COUNTY</u>						
S.F. or L.A.	0.52 (3.30)	0.54 (2.86)	----- -----	0.38 (2.57)	----- -----	----- -----
Rural	----- -----	----- -----	-0.59 (-3.83)	-0.33 (1.96)	-1.02 (-3.25)	----- -----
<u>COUNSEL</u>						
Private Atty.	0.66 (2.86)	----- -----	----- -----	----- -----	----- -----	-0.98 (-1.85)
Non-white & Priv.	-0.78 (-2.45)	----- -----	----- -----	-0.45 (-2.12)	----- -----	----- -----

*Estimated Coefficient/Standard Deviation

COMPARATIVE EFFECTS OF VARIABLES EVALUATED AT THE MEANS (ROBBERY)

	Dismiss/Acquit Base Change		Probation/Fine Base Change		Jail 0-7 mo. Base Change		Jail 7/CYA Base Change		CRC/MDSO Base Change		Prison - Lesser Base Change		Prison - Robbery Base Change	
<u>AGE</u>														
18-21	.14	-.03 (-1.63)	.09	-.0003 (-.01)	.22	+.02 (.91)	.23	+.17 (6.75)	.03	-.02 (-4.73)	.02	-.01 (-4.59)	.26	-.14 (-7.31)
26-35	.12	-.004 (-2.46)	.03	+.03 (2.53)	.12	-.004 (-2.45)	.19	-.01 (-2.49)	.06	-.002 (-2.41)	.04	-.001 (-2.35)	.44	-.01 (-2.52)
35+	.12	+.07 (1.93)	.02	+.05 (2.19)	.10	+.03 (1.10)	.17	-.03 (-3.04)	.05	-.01 (-2.68)	.04	-.01 (-2.84)	.51	-.10 (-3.16)
<u>RACE</u>														
Negro	.09	+.13 (7.05)	.07	+.01 (.86)	.20	-.03 (-5.18)	.29	-.04 (-5.25)	.05	-.02 (-2.73)	.02	-.003 (-4.11)	.28	-.04 (-5.30)
Mexican	.08	-.003 (-1.57)	.06	+.03 (1.61)	.18	-.006 (-1.60)	.28	-.01 (-1.60)	.05	-.002 (-1.57)	.02	-.0008 (-1.56)	.32	-.01 (-1.61)
<u>SEX</u>														
Female	.13	+.18 (4.11)	.10	+.08 (2.13)	.22	+.04 (8.88)	.29	-.18 (-7.91)	.03	+.01 (.57)	.01	+.01 (.82)	.22	-.13 (-7.70)
<u>CRIMINAL RECORD</u>														
No record	.10	+.04 (1.73)	.06	+.10 (4.18)	.16	+.21 (6.20)	.31	-.08 (-2.53)	.05	-.04 (-6.35)	.02	-.02 (-4.85)	.29	-.22 (-9.96)
Minor record	.11	+.01 (.73)	.06	+.07 (4.15)	.15	+.10 (4.24)	.31	-.002 (-.08)	.05	-.04 (-4.67)	.02	-.01 (-4.08)	.30	-.14 (-6.19)
One prison com.	.11	+.03 (4.15)	.08	-.05 (-2.66)	.13	-.06 (-2.45)	.22	-.10 (-3.63)	.06	+.02 (3.98)	.03	+.03 (1.96)	.38	+.12 (4.47)
Two+ prison com.	.11	-.03 (-1.25)	.11	-.10 (-4.99)	.14	-.09 (-3.06)	.20	-.09 (-3.00)	.06	-.03 (-2.00)	.02	+.02 (4.74)	.35	+.33 (7.78)
<u>COUNTY</u>														
S.F. or L.A.	.12	+.04 (2.45)	.06	+.02 (1.98)	.21	-.04 (-3.87)	.23	+.04 (1.68)	.05	-.01 (-3.49)	.02	-.004 (-3.38)	.32	-.06 (-4.04)
Rural	.09	+.02 (3.77)	.06	+.02 (3.61)	.24	-.07 (-3.10)	.26	-.02 (-.76)	.05	-.03 (-2.99)	.02	+.01 (3.31)	.28	+.08 (3.84)
<u>COUNSEL</u>														
Private Atty.	.09	+.07 (2.99)	.09	-.006 (-2.23)	.22	-.01 (-2.26)	.25	-.02 (-2.25)	.04	-.003 (-2.18)	.03	-.02 (-2.76)	.28	-.02 (-2.27)
Non-white & Priv.	.29	-.11 (-2.03)	.08	+.03 (2.90)	.16	+.05 (2.96)	.24	-.04 (-1.02)	.02	+.01 (2.67)	.01	+.002 (1.67)	.21	+.07 (2.97)

*The entry in parenthesis is the estimated change divided by its estimated standard deviation.

ESTIMATES OF THE COEFFICIENTS OF THE LOGISTIC MODEL

Offense: Burglary

	Dismiss/Acquit	Probation/Fine	0 < Jail ≤ 3 mo.	3 < Jail ≤ 7 mo.	Jail > 7/CYA	CRC/MDSO
<u>CONSTANT</u>	-1.16 (-8.08)*	-0.88 (-8.17)	----	0.39 (4.46)	0.22 (2.46)	----
<u>AGE</u>						
18-21	0.83 (4.54)	1.02 (6.81)	1.17 (8.08)	1.00 (6.84)	1.49 (10.47)	----
26-35	0.39 (2.79)	----	----	----	----	----
35+	0.71 (3.48)	0.68 (4.28)	----	0.37 (2.32)	----	-0.65 (-2.20)
<u>RACE</u>						
Negro	0.89 (5.58)	0.49 (3.74)	0.43 (3.57)	0.23 (1.78)	0.39 (3.13)	----
Mexican	0.41 (2.40)	----	----	0.33 (2.83)	0.33 (2.91)	0.58 (3.98)
<u>SEX</u>						
Female	1.00 (4.36)	1.16 (6.18)	0.88 (4.45)	----	----	0.54 (1.77)
<u>CRIMINAL RECORD</u>						
No record	2.55 (7.13)	3.43 (10.11)	3.07 (9.07)	2.19 (6.38)	0.91 (2.55)	----
Minor record	1.55 (6.48)	2.27 (10.19)	2.08 (9.55)	1.61 (7.28)	0.95 (4.32)	0.55 (2.07)
One prison com.	-1.17 (-5.21)	-1.10 (-5.29)	-1.20 (-5.74)	-1.19 (-6.33)	-0.71 (-4.53)	-1.20 (-5.27)
Two+ prison com.	-1.77 (-6.19)	-1.77 (-6.78)	-2.07 (-6.67)	-1.77 (-7.36)	-1.05 (-6.07)	-2.13 (-5.35)
<u>COUNTY</u>						
S.F. or L.A.	0.53 (4.45)	0.90 (9.35)	----	----	0.47 (5.32)	----
Rural	----	----	-0.92 (-9.25)	-0.42 (-4.42)	----	-0.38 (-2.93)
<u>COUNSEL</u>						
Private Atty.	0.59 (3.59)	0.62 (5.15)	0.38 (3.18)	----	----	0.73 (-3.51)
Non-white & Priv.	-0.95 (-3.12)	-0.69 (-2.79)	-0.56 (-2.18)	-1.02 (-3.85)	-0.83 (-3.52)	----

.. *Estimated Coefficient/Standard Deviation

COMPARATIVE EFFECTS OF VARIABLES EVALUATED AT THE MEANS (BURGLARY)

	Dismiss/Acquit Base Change		Probation/Fine Base Change		0 < Jail <= 3 mo. Base Change		3 < Jail <= 7 mo. Base Change		Jail > 7/CYA Base Change		CRC/MDSO Base Change		Prison Base Change	
<u>AGE</u>														
18-21	.10	-.02	.22	-.01	.21	+.02	.22	-.01	.15	+.08	.05	-.03	.05	-.03
		(-1.82)		(-.46)		(1.62)		(-.77)		(6.15)		(-6.97)		(-6.89)
26-35	.09	+.04	.14	-.01	.14	-.01	.18	-.01	.23	-.01	.08	-.003	.13	-.03
		(2.75)		(-2.72)		(-2.72)		(-2.73)		(-2.73)		(-2.70)		(-2.73)
35+	.08	+.05	.13	+.07	.11	-.02	.16	+.03	.26	-.05	.07	-.04	.20	-.04
		(2.70)		(3.54)		(-3.57)		(1.23)		(-3.74)		(-3.40)		(-3.75)
<u>RACE</u>														
Negro	.08	+.05	.18	+.02	.17	+.01	.20	-.03	.23	-.002	.06	-.02	.08	-.02
		(4.11)		(1.16)		(.45)		(-2.06)		(-.15)		(-4.52)		(-4.57)
Mexican	.08	+.02	.17	-.04	.16	-.03	.20	+.02	.24	+.03	.06	+.02	.09	-.02
		(1.16)		(-4.14)		(-4.20)		(1.20)		(1.30)		(2.45)		(-4.16)
<u>SEX</u>														
Female	.11	+.04	.22	+.13	.20	+.05	.21	-.10	.18	-.09	.04	-.005	.05	-.02
		(1.66)		(4.01)		(1.53)		(-7.38)		(-7.31)		(-.51)		(-6.34)
<u>CRIMINAL RECORD</u>														
No record	.08	+.02	.12	+.24	.14	+.15	.19	-.03	.33	-.25	.06	-.05	.08	-.07
		(1.30)		(11.36)		(7.35)		(-1.68)		(-14.68)		(-9.07)		(-10.94)
Minor record	.09	+.001	.12	+.13	.14	+.10	.19	+.01	.31	-.14	.07	-.04	.08	-.07
		(.09)		(8.96)		(6.86)		(.92)		(-8.58)		(-6.85)		(-10.71)
One prison com.	.12	-.03	.13	-.03	.12	-.04	.19	-.06	.23	+.03	.09	-.03	.12	+.16
		(-2.01)		(-1.77)		(-2.42)		(-2.83)		(1.18)		(-2.09)		(6.66)
Two+ prison com.	.13	-.06	.16	-.06	.10	-.06	.21	-.09	.22	+.04	.07	-.04	.12	+.27
		(-2.51)		(-2.90)		(-4.24)		(-3.24)		(1.23)		(-2.77)		(8.80)
<u>COUNTY</u>														
S.F. or L.A.	.09	-.02	.12	+.10	.23	-.06	.24	-.06	.19	+.03	.06	-.01	.07	-.02
		(2.25)		(8.26)		(-8.44)		(-8.27)		(2.58)		(-7.37)		(-8.25)
Rural	.07	+.03	.13	+.05	.26	-.12	.26	-.03	.18	+.06	.05	-.004	.05	+.02
		(7.32)		(7.89)		(-8.93)		(-1.80)		(8.01)		(-7.03)		(6.19)
<u>COUNSEL</u>														
Private Atty.	.09	+.03	.20	+.08	.20	+.02	.20	-.05	.20	-.05	.05	-.03	.06	-.01
		(2.31)		(4.25)		(1.33)		(-4.75)		(-4.77)		(-5.76)		(-4.70)
Non-white & Priv.	.17	-.04	.26	+.01	.18	+.03	.16	-.04	.18	-.02	.02	+.02	.04	+.04
		(-1.07)		(.18)		(.99)		(-1.70)		(-.72)		(3.08)		(3.04)

*The entry in parenthesis is the estimated change divided by its estimated standard deviation.

set to 1, and a significance quotient equal to the change divided by its standard error. (This quotient is asymptotically normally distributed with mean 0 and variance 1.) The "base" probability represents the estimated probability for a "typical" individual as described above except that the variable indicating the presence of the attribute in question is set to zero. The "change" represents the increase or decrease in probability which results from setting the given variable to 1, i.e., the effect of changing the attribute from the attribute incorporated in the constant term to the one represented by the variable. Thus, the algebraic sum of base and change for each variable represents the estimated probability that the "typical" individual will fall into the indicated outcome state.

We discuss now the computed net effects of the variables for both robbery and burglary. It should be pointed out that the attributes which we have used in our study may not be independent of other factors which affect case disposition. Therefore, any conclusions which are drawn from the numerical results must be viewed with caution, and the explanations in the discussion of results which follows should be viewed as hypothetical.⁶

The constant term represents a series of traits and so no simple interpretation is possible. Although it would be feasible to bifurcate the sample on the basis of the attributes subsumed in the constant and look at the contrasts in the probabilities, this was not done as it would not be consonant with the rest of the analysis.

Age Variables

Age 18 - 21: This variable has virtually the same influence in robbery cases and burglary cases. The chance of dismissal or acquittal (i.e., of escaping without conviction) is somewhat lessened. The probability of being convicted of some offense but receiving probation or a fine only, shows no significant change. The probability of receiving a short jail term increases for both robbery and burglary, although these changes are not particularly significant. The probability of a long (more than 7 month) jail term is substantially higher for both. This is probably explained by the inclusion of Youth Authority commitments in this category. Eighteen-to-21 year olds are substantially less likely to receive treatment (CRC or MDSO) and also substantially less likely to receive a prison sentence of any form. Thus, there is a general pattern showing more favorable outcomes for 18-21 year olds, except for the probability of dismissal or acquittal. This might be explained by the prosecutor's greater willingness to plea bargain cases in the municipal court when faced with a young defendant.

Age 26 - 35: These defendants are somewhat older than the median. For robbery, this variable increases the chance of dismissal or acquittal, but reduces the chance of receiving probation or a fine only. For burglary, the effects on these two outcomes are reversed. For both offenses, all the other outcomes are uniformly less likely. The reason for the difference between the robbery pattern and the burglary pattern is not clear; a possible explanation is that a robbery defendant who is in a relatively good position may be more willing to accept a plea bargain (or sentence bargain) resulting in minor punish-

ment because of the seriousness of the charge.

Age over 35: This variable tends to behave similarly for robbery and burglary. Both the probabilities of dismissal or acquittal and of probation or fine only are increased. The probabilities of prison, CRC, or a lengthy jail term are decreased. In general, allowing for their other characteristics, defendants over age 35 tend to fare substantially better than the 21-to-26 year olds.

Age 21 - 26: The above discussion shows that members of this age group tend to do poorly relative to other age groups. In particular, since being in any other age group decreases the probability of being sent to prison or CRC, being in the 21-26 group must increase the probabilities of these more harsh outcomes. It is not surprising that younger offenders receive lighter sentences; indeed, the California criminal justice system even makes special provision for them with the Youth Authority. (The maximum age for commitment to the Youth Authority is 26, but the average age is much lower). Why older offenders over the age of 26 should do better is not apparent. The results may reflect sympathy on the part of the judge, jury, or prosecutor for older defendants, who (presumably) are more likely to be settled in the community with a job and a family. Another possible explanation stems from the fact that the criminal record variables embody only total criminal activity over a lifetime. Recent behavior (or a time-weighted average) may be an important consideration in sentencing. Older defendants with the same criminal record classification as younger ones probably tend to have their offenses spread out over a longer period of time, and thus may have less recent criminal activity.

Race Variables

Race Mexican: For robbery, all effects were just below the 90% significance level. There were decreases in every outcome probability, except that of receiving probation or a fine only. For burglary, some effects were quite significant. The probabilities of receiving probation or a fine only, or a jail sentence of not more than three months showed highly significant decreases, as did the probability of being sent to prison. The probability of being sent to CRC showed a marginal increase.

Race Negro: For robbery, there was a highly significant increase in the probability of dismissal or acquittal; the probability of probation or fine only showed an insignificant increase. All other outcome probabilities showed significant decreases. For burglary, the results were somewhat similar. There was a very significant increase in the probability of dismissal or acquittal. There were very significant decreases in the probabilities of being sent to prison and of being committed to CRC. There was a significant decrease in the probability of being sentenced to jail for 3-7 months, and a minor increase in the probability of receiving probation or a fine only.

These figures show that members of minority races, and especially Negroes, tend to fare much better than similar white defendants; this came as something of a surprise. Several possible explanations can be suggested. One is that the police tend to make weaker arrests and the prosecutors tend to file weaker cases if the defendant is black or chicano, and the court system compensates for this effect. This explanation is not wholly satisfactory, because bad arrests should usu-

ally be weeded out before charges are filed in the municipal court, and weak cases should largely be disposed of in the municipal court, either at the preliminary hearing or by plea bargaining. Nevertheless, the effects of this supposed police and prosecutorial bias might to some extent filter through to the superior courts.

Another explanation is that prosecutors may have greater difficulty in winning cases with minority-race defendants. Victims and witnesses, themselves most often non-white in these cases, may be more transient or difficult to locate. Furthermore, they may be more hostile toward the criminal justice system, and also may be subject to intimidation. In addition, juries may find such witnesses less credible, or alternatively, might consider crimes with minority-race victims to be unimportant, and therefore be less likely to convict the defendant. Their biases would induce an overall more favorable result for minority defendants.

Finally, the results may reflect a disposition on the part of judges toward lesser sentences for non-white defendants. Further computations were performed to test this theory, and are discussed below.

Sex Variable

Because of the relatively small number of female defendants, the variances for this variable in the robbery analysis were generally large. Nevertheless, there were quite significant increases in the probabilities of dismissal or acquittal, and probation or fine. There were large, highly significant decreases in the probabilities of receiving a long jail term or being sentenced to the Youth Authority,

and of being sent to prison for robbery. There were also increases in the probabilities of receiving a 0 - 7 month jail term, of being committed to CRC, and of being sentenced to prison for a lesser offense, but these changes were not significant.

For burglary, the effects were rather similar. The probabilities of dismissal or acquittal, and of probation or fine showed significant increases, and the probability of being sent to jail for 0 - 3 months showed an increase which was significant just below the 90% level. The probabilities of being sentenced to prison, or being sentenced to jail for 3 - 7 months, and or being sentenced to jail for more than seven months or to CYA all showed highly significant decreases. The probability of being sentenced to CRC showed an insignificant decrease.

It is quite clear from the above that female defendants, on the average, achieved much more favorable dispositions of their cases than did males. This could reflect a less active role for women in the commission of crimes, especially when they are coparticipants. This phenomenon would tend to produce lesser sentences when convicted, and also weaker cases which are more likely to be plea bargained. Another possibility (probably more likely in 1973 than today) is that the sentencing pattern reflects the protective instincts of male judges toward women.

Criminal Record Variables

As would be expected, this group of variables had the most significant effects on the case dispositions. The results followed a general pattern whereby, as severity of criminal record increased, so did severity of punishment. The results are summarized in the table on the following page.

EFFECTS OF CRIMINAL RECORD ON CASE RESULT

	ROBBERY			
	no. record	minor record	one prison	two+ prison
dismiss or acquit	+	.	+	-
probation or fine	+ +	+ +	-	- -
jail 0-7 mo	+ + + +	+ +	-	- -
jail > 7 mo or C.Y.A.	- -	.	- -	- -
C.R.C. or M.D.S.O.	-	-	+	-
prison (lesser off)	-	-	+	+
prison (robbery)	- - - -	- -	+ +	+ + + +

	BURGLARY			
	no. record	minor record	one prison	two+ prison
dismiss or acquit	.	.	-	-
probation or fine	+ + + +	+ +	-	-
jail 0-3 mo	+ + + +	+ +	-	-
jail 3-7 mo	-	.	-	- -
jail > 7 mo or C.Y.A.	- - - -	- -	+	+
C.R.C. or M.D.S.O.	- -	-	-	-
prison	- -	- -	+ + + +	+ + + +

Plus (+) and minus (-) signs are used to represent, respectively, increases and decreases in outcome probabilities which are attributable to the listed variables. Multiple occurrences of the signs indicate both greater magnitudes and increased statistical significance levels.

The sentencing pattern for CRC seems to indicate that offenders are not usually considered for treatment unless they have amassed a record of serious criminal behavior, but are also less likely to be sent to CRC if they have already been to prison -- perhaps because it is felt that rehabilitative efforts will be ineffective.

The pattern for the greater than 7 month jail outcome for robbery is quite similar to the one for the 3 - 7 month jail outcome for burglary. The tables suggest that these outcomes, which are intermediate sentences for the respective offenses, are very common for those offenders with major (i.e., intermediate) criminal records.

The dismiss or acquit outcome shows some unusual behavior for robbery, in that the probability of that outcome is higher both for defendants with no record, and also for defendants with one prison commitment. This could reflect a bimodal result, whereby defendants with no record are more likely to win acquittal at trial, and defendants with one prison commitment may win dismissals more frequently (presumably because prosecutors file weaker cases against them because the chances of a substantial sentence are greater if conviction is obtained). The changes in this outcome category could also simply reflect the propensity for different types of defendants to go to trial rather than accept a plea bargain. Classes of defendants who force their cases to trial will win more dismissals or acquittals, and achieve fewer compromise dispositions.

County Variables

San Francisco or Los Angeles: For robbery, there were significant increases in the probabilities of dismissal or acquittal, of probation

or fine, and of more than 7 months jail or CYA. The other outcomes showed decreases which were even more significant, the largest being in the probability of being sentenced to prison for robbery. For burglary, the effects were the same, except that the magnitude of the changes was smaller. Defendants are much more likely to receive no incarceration at all, and are also more likely to receive a jail term (albeit a long one) rather than be committed to prison. For both robbery and burglary, the increase in long jail terms counterbalances the decreases in more serious dispositions. This probably results from increased plea bargaining, although it could also reflect different attitudes towards sentencing on the part of judges.

"Rural" County: This variable actually represents counties with below-average population density; not enough Californians live in truly rural counties to provide a substantial sample. For both robbery and burglary, there were significant increases in the probabilities of dismissal or acquittal, of probation or fine, and of receiving a prison sentence. For robbery, short jail sentences showed a significant decrease, and long jail sentences (or CYA) an insignificant decrease. For burglary, there was a very significant increase in long jail sentences, and decreases in the other two jail categories, the decrease in 0 - 3 month terms being especially large. There was also less sentencing to CRC. The pattern here suggests that there is less plea bargaining and sentence bargaining in these counties, particularly since there are fewer "compromise" sentences. This would be consistent with the hypothesis that there is less court congestion in those counties. It may also be possible that there is less complete screening in the

municipal courts; this would explain the higher dismissal rate.

Attorney Variables

Two variables were used, one for private attorney, and another for non-white defendant and private attorney. This was done because the cross-tabulations indicated that the effect of a private attorney was probably race-dependent. A private attorney as used means an attorney who was hired by the defendant; it does not include attorneys who were court-appointed, even if they maintain private practices.

Private Attorney: For robbery, there was a large increase in the probability of dismissal or acquittal; there were small decreases in all other outcome probabilities. For burglary, there were increases in the three outcomes most favorable to the defendant; there were decreases in the unfavorable outcomes.

Non-white and private attorney: For robbery, this variable had the opposite effect from the private attorney variable, except for the more than seven-month jail outcome, where the change was not significant. These effects more than outweighed the effects of having a private attorney, except for the more than seven-month jail term and prison-lesser offense outcomes. For burglary, the effects of this variable were less pronounced. The only outcome where there were substantial changes relative to the effect of a private attorney alone were in the 3 - 7 month jail category, where there was a further decrease, and in the prison outcome, where there was a very substantial increase.

The fact that the attorney variables are tied in with income makes them difficult to interpret. Only poor defendants are entitled to

court-appointed attorneys, but they may, of course, hire (or their family or friends may hire) a private attorney. Since minority-race defendants tend to have low incomes they are more frequently eligible for free legal representation. This suggests that an explanation of the anomalous behavior of the non-white and private attorney variable: It is possible non-whites may hire their own attorneys only when they perceive themselves to be in serious trouble (more likely to be true in robbery cases than in burglary). Consequently, these defendants constitute a biased sample whose cases are likely to be more serious and hence result in more unfavorable outcomes, such as prison. The apparently favorable effect of having a private attorney (at least for white defendants) could be the result of better legal representation, but it could also result from jury (or other) favoritism toward middle-income defendants in robbery and burglary cases.

V. FURTHER ANALYSIS

Some of the results which we obtained, particularly for the race variables, were somewhat surprising. Therefore, we decided to seek additional ways to analyze the data in order to extract more information. The preceding analysis treated the system, once a case is filed, as a unit rather than a step-by-step process. We felt that more insight could be gained through a multistage model which would more accurately reflect the manner in which the criminal justice system operates.

In an attempt to isolate some of the factors which affect overall results, we decided to examine sentencing in cases where the defendant was convicted at trial of the offense charged. This would eliminate

results, we decided to examine sentencing in cases where the defendant was convicted at trial of the offense charged. This would eliminate the influence of plea bargaining and sentence bargaining, and focus entirely on what factors influenced the judge's decision as to sentence.

This sentencing analysis was conducted for both robbery and burglary. In each case, we were confronted with the problem that a defendant could be convicted of the charged offense in either the first or the second degree. Therefore, we analyzed sentencing as a whole, and also by degree of conviction for each offense. Because of the small number of cases involved, we used only two sentence categories: prison and no prison.

For robbery, there were 218 convictions. For the 165 first-degree convictions, 146 defendants received prison sentences. For the 53 second-degree convictions, 26 defendants were sentenced to prison.

Because of the small number (19 out of 165) of defendants who did not receive prison sentences when convicted of first-degree robbery, the variances of the estimated coefficients were large. The only variables with 90% significance levels were age variables. Being in any age group other than 21-26 increased the probability of being sentenced to prison. The results in tabular form are as follows:

SENTENCING AFTER CONVICTION AT TRIAL (ROBBERY 1st DEGREE)

Variable	No Prison Coefficient	Estimated effects at sample means			
		No Prison		Prison	
		Base	Change	Base	Change
Age 18-21	-2.81 (-4.73)	.5000	-.4434 (232.8)	.5000	+.4434 (13.97)
Age 26-35	-3.99 (-3.95)	.5000	-.4818 (-1444.)	.5000	+.4818 (26.74)
Age 35 +	-3.04 (-2.97)	.5000	-.4545 (-214.9)	.5000	+.4545 (10.24)

The sentences for second-degree robbery were more evenly split between prison and no prison, and so resulted in more coefficients which were significant. There were two variables; Age 26-35 and Non-white with Private Attorney, which increased the probability of being sentenced to prison. Race Mexican, Race Negro, Sex Female, and Private Attorney all decreased the probability of a prison sentence. The largest effects were noted for the variables Non-white with Private Attorney and Sex Female. The results in tabular form are as follows:

SENTENCING AFTER CONVICTION AT TRIAL (ROBBERY 2nd DEGREE)

Variable	No Prison Coefficient	Estimated effects at sample means			
		No Prison		Prison	
		Base	Change	Base	Change
Age 26-35	-3.66 (-2.40)	.7958	-.5867 (-1.21)	.2042	+.5867 (2.54)
Race Mexican	3.56 (-1.85)	.0167	+.3567 (3.37)	.9833	-.3567 (-2.03)
Race Negro	4.31 (2.74)	.0183	+.5615 (3.35)	.9817	-.5615 (-4.59)
Sex Female	4.67 (2.55)	.1473	+.8011 (.64)	.8527	-.8011 (-5.14)
Private Atty	3.90 (2.03)	.0229	+.5141 (1.82)	.9771	-.5141 (-2.12)
Non-white & Priv.	-6.03 (-2.23)	.9683	-.8997 (-4.75)	.0317	+.8997 (7.31)

When the first-degree and second-degree groups were combined without regard to degree of conviction, five variables were significant at 90% levels. The results were as follows:

SENTENCING AFTER CONVICTION AT TRIAL (ROBBERY 1st & 2nd DEGREE)

Variable	NO PRISON Coefficient	ESTIMATED EFFECTS AT SAMPLE MEANS			
		NO PRISON		PRISON	
		Base	Change	Base	Change
Age 18-21	-1.67 (-4.69)	.4212	-.3007 (-6.79)	.5788	+.3007 (6.79)
Age 26-35	-2.67 (-3.53)	.2575	-.2340 (-3.23)	.7425	+.2340 (3.23)
Sex Female	2.92 (3.00)	.1418	+.6142 (3.80)	.8542	-.6142 (-3.80)
One Prison Com.	-1.94 (-2.57)	.1372	-.1148 (-2.51)	.8628	+.1148 (2.51)
Two+ Prison Com.	-2.71 (-2.62)	.2246	-.2056 (-3.50)	.7754	+.2056 (3.50)

The race variables had coefficients which were slightly below the 90% significance level, and again decreased the probability of a prison sentence.

For burglary, there was a total of 306 trials resulting in convictions. In the 73 cases which resulted in first-degree convictions, 39 defendants were sentenced to prison. For the 233 second-degree convictions, 139 defendants were sentenced to prison.

For first-degree burglary, six variables were statistically significant at a 90% level. The variables One prison commitment and Two + prison commitments increased the probability of being sentenced to prison. The variables Age 18-21, Race Negro, No or minor record,⁷ and Rural County all decreased the probability of being sentenced to prison. The variable Race Mexican had no substantial effect.

The results in tabular form are as follows:

SENTENCING AFTER CONVICTION AT TRIAL (BURGLARY 1st DEGREE)

Variable	No Prison Coefficient	Estimated effects at sample means			
		No Prison		Prison	
		Base	Change	Base	Change
Age 18-21	1.92 (1.80)	.7629	+.1937 (2.02)	.2371	-.1937 (-2.02)
Race Negro	1.33 (1.65)	.2021	+.2872 (1.74)	.7979	-.2872 (-1.74)
No/minor record	2.69 (2.79)	.5987	+.3.579 (3.14)	.4013	-.3579 (-3.14)
One prison com.	-2.62 (-1.76)	.5125	-.4414 (-2.95)	.4875	+.4414 (2.95)
Two+prison com.	-2.77 (-2.42)	.5364	-.4686 (-3.33)	.4636	+.4686 (3.33)
Rural	2.59 (2.97)	.2297	+.5690 (3.88)	.7703	-.5690 (-3.88)

For second-degree burglary, only the criminal record variables were significant at a 90% level. Having no record or a minor record decreased the probability of being sentenced to prison; having one or more prior prison commitments increased the probability of being sentenced to prison. Race Mexican tended to decrease the probability of a prison sentence, but was slightly below 90% significance. All other variables had negligible effects. The results in tabular form are as follows:

SENTENCING AFTER CONVICTION AT TRIAL (BURGLARY 2nd DEGREE)

Variable	No Prison Coefficient	Estimated effects at sample means			
		No Prison		Prison	
		Base	Change	Base	Change
Age 18-21	1.86 (2.61)	.6279	+.2878 (3.35)	.3721	-.2878 (-3.35)
Race Mexican	1.44 (2.04)	.1814	+.3029 (2.14)	.8186	-.3029 (-2.14)
Race Negro	0.96 (1.90)	.3733	+.2365 (1.98)	.6267	-.2365 (-1.98)
No/minor record	1.77 (2.51)	.6583	+.2607 (3.22)	.3417	-.2607 (-3.22)
One prison com.	-2.22 (-2.84)	.6093	-.4643 (-3.54)	.3907	+.4643 (3.54)
Two+prison com.	-1.07 (-1.88)	.4927	-.2419 (-2.07)	.5073	+.2419 (2.07)

When the two burglary groups were combined without regard to degree six variables were statistically significant at a 90% level. These were the results:

SENTENCING AFTER CONVICTION AT TRIAL (BURGLARY 1st & 2nd DEGREE)

Variable	NO PRISON Coefficient	ESTIMATED EFFECTS AT SAMPLE MEANS			
		NO PRISON		PRISON	
		Base	Change	Base	Change
Age 18-21	-1.15 (-2.97)	.7321	+.1645 (3.45)	.2679	-.1645 (-3.45)
Race Mexican	0.73 (2.06)	.4353	+.1811 (2.13)	.5647	-.1811 (-2.13)
Race Negro	0.44 (1.71)	.4848	+.1099 (1.74)	.5152	-.1099 (-1.74)
No or minor record	1.81 (3.74)	.6813	+.2475 (5.34)	.3187	-.2475 (-5.34)
One Prison Com.	-1.64 (-4.17)	.5977	-.3732 (-5.04)	.4023	+.3732 (5.04)
Two+ Prison Com.	-1.72 (-4.43)	.5784	-.3817 (-5.67)	.4216	+.3817 (5.67)

The variable Non-white with Private Attorney was close to 90% significance; it increased the probability of being sentenced to prison.

The foregoing results are rather difficult to interpret. Because of the relatively small quantity of data, there is a substantial possibility of some variables acting as substitutes for others which happen to be correlated in the sample. The fact that estimated coefficients often changed substantially when insignificant variables were eliminated suggests that this was occurring.

The criminal record variables were the only ones that behaved reliably; they showed that sentences tended to be more severe as the gravity of the record increased. The behavior of the age variables, particularly Age 18-21, was anomalous in the case of robbery. This suggests that the set of cases which were taken to trial may not have been representative; it may well have been that young defendants could not reach an acceptable plea bargain primarily when they had committed very serious offenses or had amassed a serious juvenile record (which would not have included prison commitments). The Sex female variable, however, did behave as our prior results would suggest. In any event, the results for robbery are suspect because so few defendants escaped prison sentences when convicted; there may not be enough data to overcome the effects of the facts of the particular cases, happenstance interrelationships between attributes, or even the sentencing characteristics of individual judges.

There was more data for burglary convictions, and the sentences were better split between prison and no prison. The criminal record

variables had the expected effect, and also as might be expected, Age 18-21 decrease the probability of being sentenced to prison.

The results for burglary do show that minority race defendants were less likely to be sentenced to prison than white defendants. However, the coefficients for these variables were not as significant as those for the other characteristics. Furthermore, their effect appears to depend in part upon the degree of conviction although much of the distinction between first- and second- degree burglary is purely technical. Additionally, there may be an interrelationship between the race of the defendant which could explain sentencing differences. For example, it would seem likely that many of the burglaries which are committed by minority-race defendants are committed in areas near where they live, and hence would tend to have minority-race victims more frequently. Since these victims would also tend to have below-average incomes, the average value of property stolen from their homes in a burglary would also be below the average value stolen.

In summary, while it does appear that non-white defendants are less likely to be sentenced to prison even if convicted at trial, the absence of other important data, which may well be related to race, makes it impossible for us to conclude that the differences in sentencing are actually caused by the race of the defendant. However, it can at least be said that the results obtained are inconsistent with the conventional hypothesis that the criminal justice system discriminated against minority race defendants in 1973.

VI. SOME QUALIFICATIONS AND LIMITATIONS

It must be recognized that the data base encompasses superior court filings only. Thus, cases which never reach the superior court go unrecorded. The police may arrest a suspect, but if the district attorney refuses to issue a complaint (or if the grand jury refuses to indict), there will be no record on the tape. Similarly, if a felony complaint is filed, but the prosecutor reaches a plea bargain in the municipal court reducing the offense to a misdemeanor, the case will never reach the superior court, and hence also will go unrecorded. Cases which reach superior court cannot be expected to be representative of all those which are filed. Therefore, our conclusions can apply only to proceedings in superior court; they are not applicable to the defendant whose case never gets that far.

It is also apparent that much information which could affect the outcome of a case is missing. One would expect the most important factor in determining the disposition of a case to be the soundness of the prosecution's case. The data contain no measurement of this important factor, presumably because it is difficult to assess and is not recorded in a usable form by either the prosecutor or defense attorney. The absence of this information of course means that we could not analyze its influence on case outcome, but it has other implications as well. If the soundness of a case is related to other reported characteristics, then it will affect our measurement of the effects of these characteristics. Factors such as the cost to the prosecution and defendant of trying the case are also not recorded.

Another problem with the data is that it contains no indication of severity of the charge, nor of the charging of multiple counts in the same proceeding. For example, it cannot be determined whether a defendant is charged with armed robbery, unarmed robbery, or robbery with great bodily injury, nor whether he is accused of stealing \$200 or \$200,000. Likewise, it cannot be ascertained whether the defendant is charged with four counts of burglary, or just one count of burglary, or even burglary and attempted rape. Furthermore, there is no indication of whether the defendant is facing other charges in the same or another county. The omission of these factors makes it impossible to determine whether, and to what extent, plea bargaining has occurred. Their absence also means that crucial information which should go into any predictive model of the criminal justice system is lacking.

Still other potentially significant information is omitted. The defendant's wealth or income level is not supplied, but it may be related to other factors such as race, criminal history, or type of attorney. These variables could then substitute for income and thus, possibly erroneously, appear significant. Another failing is that the reasons for dismissal are not informative; apart from dismissal after a successful motion under section 995 of section 1538.5 of the Penal Code, there is only one category for dismissals. In many instances, one or more data items are missing. Concurrent sentences are not indicated. Another factor which is not indicated is whether a defendant is incarcerated or released on bail or his own recognizance pending trial. It seems likely that an incarcerated defendant, at least in minor cases, would be willing to accept a less favorable plea bargain in order to resolve the case and get out of jail more quickly.

While we have found a number of interesting relationships between the characteristics of offenders and the disposition of criminal charges, we urge the reader to keep the data limitations in mind when interpreting these findings.

FOOTNOTE PAGE

¹The tape was purchased from the State Data Program at the University of California, Berkeley.

²The cross-tabulations and summary of findings are available from the Center for Econometric Studies of Crime and the Criminal Justice System, Hoover Institution, Stanford University, Stanford, California.

³See, e.g., M. Kendall & A. Stuart, The Advanced Theory of Statistics, vol. 2, § 18.26.

⁴For many of the samples on the tape, the information needed to determine at least one of the above variables was missing. These samples were discarded. There were also ten burglary cases which were filed as burglary with explosives or burglary with assault (particularly serious forms of burglary which must be charged in the complaint); these were discarded to increase the uniformity of the data. This left us with 1963 robberies and 4713 burglaries, still a substantial quantity of data.

⁵Properties of the statistical technique used necessitated combining the outcome of commitment to the California Youth Authority with one of the other states. The outcome of more than seven months jail was selected, because commitment to the Youth Authority is considered a less serious sentence than commitment to prison, and because the average term spent in Youth Authority facilities in 1973 was 11 months. (State of California, Department of the Youth Authority, Annual Report, 29 (1973)). The reasonableness of this technique was verified by separating out the CYA samples and showing that all the coefficients obtained for a long jail term and CYA commitment had the same signs; all were of comparable magnitude, except for the age 18-21 coefficient.

⁶We should note that the prosecutor's pre-filing screening and the plea-bargaining process in municipal court will affect the sample of cases which reach the superior court. If we assume that the prosecutor's prime considerations in eliminating a case before it reaches superior court are his chances of success at trial and the expected punishment which the defendant will receive if he is convicted, then it would seem that the set of cases reaching superior court would not constitute a sample which would be biased with respect to the attributes upon which we focused; but this need not be the case.

Another serious difficulty is that the model, because of computational considerations, can only deal with a small number of factors (or else a small number of output categories), and we therefore did not take into account interactions among these factors, i.e., second degree terms, except in the case of being non-white and having a private

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attorney. It is quite possible, for example, for the combination of being female and over 35 could increase the probability of being sent to prison, although each alone would decrease the probability. However, the model chosen does not permit this to occur.

⁷Because there were so few defendants with no prior record, they were combined with the minor record group.